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PEDIATRICS

A MONTHLY JOURNAL
DEVOTED TO THE
STUDY OF

Disease in Infants and Children

EDITED BY

WILLIAM EDWARD FITCH, M. D.

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PEDIATRICS

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EDITORIAL

CASTRATION AND MASTURBATION.

The foundations of the modern social structure, the maintenance of the family, and the continuance of human life rest on the integrity of the sexual instinct. Its perversion and its misuse are the most virulent factors in the disintegration of the individual and the race. Practically all of the lower animals with penile generative organs masturbate, and it is not to be wondered at that the human child soon learns that pleasure can be found in genital titillation.

Fortunately for most the habit of masturbation is practiced in moderation and when years of reason and control are reached either abondoned or occasionally indulged in.

For the few, however, it proves a curse and in the cases of children, the pertinent question arises—What is to be done? We desire, however to limit the discussion to the subject of masturbation and its treatment in young girls.

As to the cusation of the habit it is a deplorable fact that, many of these small children have been taught the habit by older persons and it has been practiced in secret until the extreme nervousness of the child has attracted the attention of the parents. Many again learn quite by accident of their anatomical peculiarities and in still others, retained smegma is the cause.

Shall clitoridectomy be recommended as a routine procedure? Those who maintain that after all other methods have failed this operation is advisable must be keenly alive to the fact that the means of gratification of the sense impression is not resident in the clitoris alone but is present in the adjacent structures. In adult women we find that stimulation of the urethra is a favorite mode of gratification and the literature of gynecology has its collection of cystic treasures that defies imagination. The psychical side is also well developed in these self-same adults; but these factors are usually absent in the child and thus augur certain promises for success in the simple operation of clitoridectomy.

We bring up this question in the hope that our many subscribers will write us again about their experiences; in return we would present a digest of these experiences—certainly a very practical problem in pediatrics.

THE PROBLEM OF MILK PRESERVATION.

We are all aware of the ingenious theory that Behring propounded: that in the milk of the human animal, in cows and even of other animals there were present antibacterial, antitoxic, and other protecting bodies which, speaking particularly in the problem of tuberculosis, might be utilized in the struggle against this one infecting micro-organism. It is pretty widely known how he proposed to hyperimmunize young cows and thus increase the amount of milk and thus eliminate entirely the scourge of infant tuberculosis which he thought was largely a matter of infection from bovine sources.

The cautious scientists have not accepted Behring's views without reserve. Bearing in mind the proven to be untrue dictum of Koch concerning the non-infectiousness of bovine tuberculosis, many have taken a middle ground, and while recognizing the digestive tract as a possible route of infection they have devoted their energies to the study of the more direct and urgent features in tuberculosis infection.

But apart from the subject of tuberculosis and milk, the phase of the subject that regards milk in the light of a living fluid and that interference with its physical, chemical and zymotic characters is bound to be reflected in conditions of disturbed nutrition, this side of the problem is worthy of special attention.

Flugge, it may be remembered, contended, in opposition to Behring, that there was no antibodies in milk, but even if these be eliminated from the discussion, the question remains, does a modification of the milk brought about by boiling, by pasteurization or by antiseptics, so alter its character as to render it a different fluid, and if so, to what extent?

It is surprising to read the researches that have been undertaken and which have arrived at contradictory conclusions. The dictum that boiled milk is the cause of infantile atrophy and Barlow's disease represents the conclusions of one series of investigators, notably Huebner and Barlow himself; while such excellent observers as Budin, d'Espine and Variot, in careful series of experiments, maintained that such was not the case. Scorbutus has been the scare line for others who would have no boiled milk (Fruitnight, Netter), while many other equally competent men pronounce such views chimerical. All of which serves to accentuate the view that as yet we are not in a position to make positive statements regarding the action of boiling on the vital principles resident in milk. Naturally the grosser features of sterilization, etc., are not under discussion in this place.

The most interesting feature of the discussion at the present time resolves itself about the use of an antiseptic in milk that will least interfere with the hypothetical antibodies of Behring and will serve the great function of keeping the milk sterile and not interfere with the digestive organs or with the physico-chemical properties of the food products. Behring maintained that formaldehyde was just such a body. Its structural simplicity; its being a constant product in all constructive metabolism in plants, and its pronounced antiseptic action, which it undoubtedly has and exercises in living metabolic activities, all lent a certain air of plausibility to the argument and stimulated another great series of researches, with customary contradictory conclusions.

It is certain we believe that the action of the Consulting Committee of the Hygienists of France whereby they condemn the use of formaldehyde as a milk preservative, will have the sanction of the major body of hygienists who have taken up this question, but it is by no means to be assumed that the discussion has been settled.

At all events we are much nearer the solution of the problem of milk preservation negatively, if not positively—today than we were two years ago when Behring promulgated his very attractive "antibodies" as important factors in the milk problem.

CLOTHES AND OTHER THINGS.

There has been so much clever advertising concerning hygienic underwear that the public has been led imperceptibly to believe that there is a specific virtue against cold in certain weaves and meshes, and the tendency is toward the substitution of cottons and linens in place of woolen fabrics in winter: At least this appears to be the idea that patients have concerning their doctor's advice.

In the widespread reaction against woolen underwear, flannel petticoats and warm stockings the "new" mother seems to think that her physician is prescribing a modern discovery for her child, instead of realizing that he is only trying to mitigate a very bad hygienic state of affairs in the overheated atmosphere in which his patient lives. Even though it be winter, it is impossible for anyone to be comfortable with wool next to their skin when an apartment or house is heated to a temperature between seventy and eighty. Physicians who advise light weight clothing that allows the heat of the body to pass off readily while in the house, and an exceedingly warm set of outer garments for out doors, are simply adapting the clothing to conditions which they cannot overcome, and are infrequently laying up a stock of snuffles and coughs for the children, in the spring and fall. Then, after furnace and steam heat is dispensed with, the general temperature of the house is much nearer that of the outdoor air, but it is likely to be at least twenty degrees cooler than what the child has been accustomed to in the winter weather.

The hardening process, which some advise is generally but an artificially applied prescription of common sense to the children of wealthy homes where there is nothing naturally hardening in the hot-house atmosphere. The majority of children, however are brought up in town and country homes where the indoor heat is irregular, and often insufficient. They run in and out of doors freely, without the careful attention of wrapping up each portion of the body evenly. It is, therefore, we believe, advisable that the body should be evenly clothed. Thus the child, whose own heat is not used and preserved by suitable underclothing is at a disadvantage in the first days of outdoor life, especially in the raw spring days.

It is impossible to advocate any one method of clothing for all children. The over steam-heated class, whose physicians prescribe well-advertised meshes of various fibres are but a small percentage of children. The main underlying principle is to teach a child to create its own heat, by exercise, rather than to depend upon artificial heat, and then to conserve that heat as the animals do by warm clothing. For the change of temperature during the passage from indoors to outdoors is not as perceptible when the child is surrounded by a layer of its own bodily heat that is not too easily radiated through the clothing.

There is a vast difference in children; some are so full-blooded that the slightest exercise causes them to perspire, and to readily catch cold if the changes are extreme; these should be slightly clothed and especial care given to draughts. Others become blue and livid with cold, through poor circulation; these should be clothed in wool, or half wool and half cotton underclothing from wrists to ankles and wear marino stockings and warm overshoes in cold weather, so that they may waste no particle of their natural heat in warming the outer air.

The mother who swathes her year-old infant in flannel bands and skirts and jackets when the temperature is 95 degrees and wonders why it has prickly heat is unwise, but no more so, than the mother who casts off the woolen band entirely all summer, regardless of cool mornings and sudden breezes and wonders why the child has diarrhea. As the woman told Tom de Willoughby, "The medjumer you are with children, the better." So we advise very strongly from principle and experience that the majority of children summer and winter should have on hand linen mesh underclothing, to be used or not with discretion, according to the temperature of their habitation, and that in cold weather they should help to equalize the difference between indoors and out, by the addition of warm outdoor garments, of which the woolen sweater is perhaps the most useful.

PEDIATRICS

ORIGINAL ARTICLES

PRACTICAL REMARKS ON THE CARE OF THE INFANT.

BY
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The writer is fully aware that in the following paper he may say things very trite, and say much that can make no claim to originality. Yet the very triteness and lack of originality must prove his excuse for what he is going to say. Experience through a long number of years has emphasized the fact of how often some of the very best men have not infrequently trouble by neglect of some of the little things, and these are neglected in the books and by many excellent teachers, because they are so simple and trite, that to them it does not seem worth while, and they are left to be picked up by accident as it were, when this very knowledge if given, often makes a great difference in the management of the case, the comfort of the patient, and not infrequently his reputation suffers.

Toilet at Birth.—The ease with which the skin of the newborn infant can be irritated is often lost sight of, even the graduate trained nurse may complicate conditions by the method of the first bath. Experience has conclusively proven to the writer that in the ligation of the cord it should be well stripped from the abdomen outward before the ligature is applied, removing all blood and gelatinous matter, minimizing to the child the risk of hemorrhage, and ensuring drying and hardening of the cord, so that the separation takes place without the moisture and odor, which is so commonly seen if this precaution is neglected. Then no simpler dressing can be applied than to wrap it in borated absorbent cotton. A soft flannel band should be applied around the abdomen, and worn for at least three months. Often the clothing is too elaborate, it should be of the simplest character, and while warm enough, should not be oppressive, and ought to be regulated by the season of the year and the weather. In giving the first bath, vaseline is the ungent very commonly used by many. I object to this most decidedly. Vaseline is more or less irritant to the delicate skin of the infant, it does not satisfactorily remove from the skin the cheesey substances, sometimes, so profusely smeared over it, and so important to be removed for the sake of cleanliness and to prevent excoriations, especially in the groins, and other creases of the body about the neck, the axillae, and the labia in girls. Space does not permit the naming of all the ungents that have been and are used, not probably so irritant as vaseline, but not more efficient as to cleanliness. The old fashioned method of free inunction with hog's lard, or if not obtainable, olive oil, or almond oil, then the bath with a copious lather of boracic acid soap, or listerine soap, is rewarded by a sweet clean skin, of course it is freely dusted with a suitable antiseptic toilet powder. The attendant must see that the mouth of the infant is properly washed and the eyes carefully guarded from infection.

Food.—What should the child's food be and how often should it be taken is a very important question. I know of none more important. The infant should be placed at the breast so soon as the fatigue of labor is over, and applied every two hours during the day, not so frequently at night, that the mother's sleep and rest may be as undisturbed as possible. Nor should the child be fed before the milk comes. If fretful, a little catnip tea, or warm water with just a dust of milk sugar in it should be given. Under this management the infant takes the breast vigorously, and the breaking of the breast is much facilitated, care being always exercised to wipe the nipples after nursing, and bathe them with alcohol to harden the mucous surface and prevent fissue of the nipple. When in spite of the utmost care this painful complication does occur the fissue should be penciled with nitrate of silver and a lead (metalic) nipple sheild worn in the interval of nursing, this has been more efficient in curing this painful affection promptly in my hands than any other means. (These shields may be purchased at any drug store.) Furthermore, I would condemn the practice of making the mother swill tea, as a milk producer, it fails of the object, and the effect of excess tells unfavorably on her nervous system and secondarily reacts on the child. Beer drinking as a milk maker is decidedly objectionable, it is like feeding a cow on brewery swill, I have repeatedly seen it the cause of most intractable eczema in the baby. A good nutritious diet, including an abundance of good milk, some good malted milk, life in the fresh air, so far as possible, are the best and most healthful milk makers for the baby.

Bowels.—There is no more important thing in the management of the baby, than careful supervision of the bowels, they should move at least once or twice a day. Even in babies where all of the food conditions are ideal, the baby is constipated, and in the experience of the writer there is no more difficult condition with which we have to deal. The books in the main are unsatisfactory in the advice given. Drugs should be avoided as far as possible, and the movement procured by a simple enema or a glycerine suppository. An occasional dose of castor oil or calomel will be most beneficial. But this condition should be corrected by other means, the baby should be given several ounces of water daily, abdomen gently massaged. If a bottle fed baby, some oat meal jelly must be incorporated into each feeding of the child, and lastly the establishment of habit, accustoming the bowels to move every day after the morning bath. The constipated baby is the one most apt to be colicky. When colic is especially distressing, much benefit will come from the administration of calomel and chalk (calomel gr. one-quarter chalk gr. ii) stimulating the liver and neutralizing the acidity. I very much deprecate the practice of giving whiskey as a remedy for colic, no use starting early to make the baby an alcoholic, it is bad for the digestion, the secondary effect being to aggravate the trouble it has been given to relieve. A little warm water with a pinch of bi-carbonate of soda is usually sufficient. The general condition of infants is much benefited by an abundance of fresh air, too much codling is bad and tends to make the infant delicate. Too much attention can not be paid to the mouth, it should be carefully washed every day with a boric solution, to minimize bacterial infection, when the teeth come they should be looked after carefully every day, and after the child attains two years old, a dentist should examine them every six months, removing decay and putting a soft filling in the cavities. Care of the deciduous teeth helps to make the permanent much better, helps the digestion of the child, and thus contributes to robust health.

Clothing.—As I have said before, the clothing of the child should be sufficiently warm, not oppressive, running the risk of giving the baby a cold. The child should live in the fresh air in suitable weather and strict regard paid to the hours of sleeping and eating. Just a word about weaning, the writer believes that the time of weaning is a movable feast. If the child is breast fed and the mother is in robust health, the weaning should be deferred until the teeth are cut and the food can be properly masticated, after a year old it should be fed on some of the more digestible foods, stale loaf bread, very friable crackers, oat meal jelly, chicken broth with well boiled rice in it, a portion of mellow apple especially if there is a tendency to constipation. I don't know that any better advice can be given as regards the bottle fed baby, only greater care should be exercised, because it is a fair inference that a bottle fed baby has not as strong digestion as one that is breast fed.

Adenoids.—The practitioner should ever be on the alert to discover adenoids, mouth breathing, noisy respiration when asleep, enlarged tonsils, susceptibility to sore throat, should cause him to make careful investigation. The services of a specialist should be promptly called for and the growths including the tonsils should be thoroughly removed, no portion of the tonsil being left, because it will be the subject of enlargement and consequent disease in the future, and in a measure defeat the benefit to accrue from removal of the adenoids.

Eruptive Troubles.—These affections in children are largely due to digestive disturbance, often to improper articles of food in the dietary of the mother. In the effort to have an abundance of milk, various articles of food or drink are taken, which while they increase the quantity of milk impair its quality, notably beer and other malt liquors, or other forms of alcohol, a most intractible ecezema resulting. This brings up finally the care of the mother during the period of nursing, a subject of vast importance, because in these modern times the fashionable mothers are opposed to nursing their infants at all, and relegate them to the care of nurses who have no incentive to fidelity in the discharge of their duty except the pay they receive. This minimizes the chances of the infant of living, or makes the struggle for survival during the first three years one of difficulty and danger. On the other hand if the mother nurses the baby, the condition of her own health should be carefully safeguarded, systematic exercise in the fresh air, early and regular hours of sleeping and eating not only for herself but for the baby. Food should be nutritious, abundant and easily digested and assimilated, milk entering largely as an article of diet as the very best milk maker. Bowels should be carefully regulated not forgetting that she drink a sufficiency of water, women in my experience do not drink enough water. She should be safeguarded from all nervous shocks and mental anxiety and worry, because these diminish the quantity and impair the quality of the milk. Infants properly fed and comfortably clothed, trained to equible habits, are amiable, good tempered, and thrive, in fact are made thereby the fittest and most likely to survive.

THE PREVENTION OF INFANT MORTALITY.*

BY

J. H. M. KNOX, Jr., Ph. D., M. D.

Baltimore, Md.

Presidentof the American Association for Study and Prevention of Infant Mortality
Associate in Pediatrics, Johns Hopkins University,

Honored guests, directors, and members of the American Association for Study and Prevention of Infant Mortality, ladies and gentlemen:—

In the name of this new association devoted to the interests of the babies of the country I bid you welcome.

We are met together to consider one of the gravest problems that can confront a commonwealth, namely, the problem of conserving its future citizens. Baldly stated, we have reasons to believe that in the United States upwards of 300,000 deaths occur each year under twelve months of age out of a total infant population of one and a half million. That is to say, that one out of every five children born alive fails to reach its first year. The total number of deaths from tuberculosis, the most devastating of all diseases, each year is about 160,000, but little more than half the number of infant deaths. It is conservatively estimated that at least one-half of the yearly infant death rate s a toll paid to parental ignorance and indifference, and can be largely averted. The immediate and thrilling aim of our endeavor, therefore, is the saving of 150,000 human lives a year within the borders of our own land. Surely a goal to enlist the co-operation of every warm-blooded citizen, and a sufficient reason for the establishment of a national society!

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*Read in Baltimore, November 9, 1910, at the first Annual Conference of the American Association for Study and Prevention of Infant Mortality.

From the outset it has been the policy of the Association to have its proceedings dictated by saneness and common sense. The need of relief is most pressing and immediate, it is true, but many of the causes of this large mortality are sanctioned by long habit and protected by well-meaning ignorance. To uproot these causes we know is a work of time and patience. We cannot go further than an enlightened public sentiment will approve. We can only point to the irredeemable suffering and loss which this needless infant death rate is producing, and at the same time demonstrate how it can be curtailed, and then await the demands of an aroused popular summons to save the babies. Some years ago Dr. Osler referred to the public as being just awakened to the importance of stamping out tuberculosis. It was, as he said, sitting on the edge of the bed and beginning to take note of the inroads of the dread malady. In these few intervening years what tremendous progress has been made! Hundreds of state and private sanitoria have been built and thousands of physicians and nurses are devoting themselves to the prevention and cure of this disease. But undoubtedly the most hopeful evidence of ultimate success is the widespread diffusion of knowledge among the people generally of the danger of tuberculosis, and of the means by which it can be prevented and successfully treated.

Along similar lines must our special campaign for the babies be waged. The pivotal point is the mother. She is the natural caretaker of her baby. *She* must be instructed in the absolute necessity of providing her baby during its dependent and helpless state with such food and surroundings as are compatible with its health and life, and we who know and have, must see to it that we share with her our know edge and means until her baby as well as ours really enters into the possession of its birthright, namely, the right to live, now so often denied it.

Is it right that the mortality rate for infants under one year is higher than for any age period up to ninety-five years, when it is much lower for babies nursed at the breast and for the bottle fed babies of the well-to-do? This is because while we are properly caring for our own babies we are indifferent to the cries of the many Rachels among the poor. The law rigidly protects the life of the unborn child and promptly proclaims it murder when it is intentionally destroyed. Can it be called anything less when the newly born infant is permitted by the public to live under conditions which just as surely, if a little more slowly, destroy its life?

At the sessions of the conference which follow the various factors which are most harmful to healthy infancy will be severally discussed, and the most successful means of controlling them pointed out.

It will not be considered an invidious distinction if in this public meeting reference is made to two or three subjects which our Association thinks to be of outstanding importance and which will be considered in detail at the subsequent sessions. And firstly we consider it fundamental in attempting to combat this widespread infant mortality to have more *accurate vital statistics*, and particularly general, prompt, and uniform registration of births. It is impossible to determine the proportion of babies that die to the total number of children without knowing the number of births. All statistical data in this country is more or less shrewd conjecture and inference. In no state in the Union is there a satisfactory registration of births. There is a woeful lack of uniformity in our state laws. We are nearly the only civilized country in the world where this dearth of accurate statistical data prevails. Many of the countries of South America are far ahead of us in this regard. The children of the immigrants coming to our shores from Europe can furnish much more satisfactory evidence for the date of their birth when applying for school privileges or the right to labor than can our own children. It has often been said that we have better records in this country of our blooded cattle and horses than of our infant population. We hope that all those who attend this conference will see to it that the births occurring in their families are duly registered at the Health Department, and that they will remind the busy and sometimes neglectful physician of this important duty. The notification of the fact of birth within a few hours which is to be distinguished from the fuller registration of the child's name with that of its parents, etc., is absolutely essential in many instances to secure the visit of nurse and social worker or physician in time to avert illness or blindness, or to save life.

Emphasis will also be laid during the conference upon the importance of *maternal nursing.* This natural sustenance is the inalienable right of every infant and should not be withheld save in very exceptional circumstances. One has only to visit in the homes of the working classes to realize that the mother who is forced to raise her child on the bottle embarks on a most uncertain sea of troubles, and the death rate among such artificially fed children is notoriously high. The truth is that the feeding of a young baby on anything other than its mother's milk requires an unusual degree of skill, intelligence and attention extremely difficult for the overworked mother to provide, and when to this is added the uncertainty of the purity of the cow's milk and the inadequate nourishment of condensed milk and proprietary foods, the baby's troubles are greatly increased. It is a well known fact that weaning is resorted to in this country far more frequently than is necessary; that in many cases a little skill and perseverance on the part of the physician will secure to the baby its proper nourishment for many months. Certainly if breast nursing could be provided during the first six months of every baby's life, our infant mortality statistics would be greatly reduced.

It is hoped that you will carry away with you also as a result of the conference knowledge of the important place that education plays in the problem of saving babies. Instruction is sorely needed immediately and at first hand in the homes. It is here that it seems to me the well equipped and devoted trained nurse has a large sphere and opportunity. She enters the home as a tactful and womanly friend and generally finds a hearty response and a warm welcome from the mother.

But the educational feature should have a still larger outlook, and instruction on many of the questions we are now discussing should be a part of the curriculum of our normal schools and female high schools. In this way the future mothers of the country would enter into that sacred relationship with some idea of its duties and responsibilities.

Many other topics of almost as much importance could be touched on if time permitted. The value of milk stations and of mothers' meetings, and of carefully planned exhibits must be mentioned.

Certainly we are at the beginning of a movement which will not rest until the preventable deaths among this most dependent portion of our population are controlled.

A word or two in closing as to the activities of this National Association during the past year. It was established as the result of a conference called by the Academy of Medicine in New Haven in November, 1909. A permanent office was opened in the Medical and Chirurgical Faculty Building, Baltimore, in January of this year. From this time more than four hundred active members have been enrolled from thirty states and from Canada, thirty organizations have become affiliated members. These include milk dispensaries, child-helping societies, social settlements, health departments, and similar organizations. We have thought that our principal field for the first year lay in educational propaganda carried on by means of literature, circulars, and the public press. More than eight thousand pieces of mail have been sent out from the office, and 22,000 circulars and leaflets have been distributed. The office has been a clearing house of information concerning all matters pertaining to the improvement of infant life, and has brought many activities in various parts of the country in touch with each other. The strength of the American Association for the Study and Prevention of Infant Mortality lies in the interest it has aroused throughout the country on behalf of the baby and in the cordial assistance it has received from all forces already interested in public health and social betterment.

But statistical information, however important and impressive it may be, does not tell the whole story.

There is a personal, individual element defying all calculation which adds indescribable interest to the work of saving babies. Sir Isaac Newton weighed but three pounds at birth and could be put in a quart cup. He was saved by a mother's loving care. Who can tell how many embryo philosophers have been unnecessarily lost to the world by the indifference of the public to the infant population? Is it not probable that we would have progressed much further as a race if the potential value of these wasted infant lives had been realized? The past cannot be redeemed, but the future is in our hands.

CYSTITIS AND PYELO-CYSTITIS IN INFANTS AND YOUNG CHILDREN.*

BY

WALTER REEVE RAMSEY.

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This condition although common has not up to the present time been recognized by the profession at large especially in this country. The most noteworthy publication in English on this subject was made by Box, which appeared in the *Lancet* in 1908, entitled, "Bactereal Infections of the Urinary Tract in Childhood." It is to Escherich of Vienna, however, that we are indebted for having first called attention to the frequent occurrence of cystitis in infants. In the sixty cases observed he was able to demonstrate the colon bacillus alone or mixed with other bacteria in fifty-eight. Soon after this publication, Finkelstein and others demonstrated that colon infection of the urinary tract was a very common condition in infants. Goppert found in his clinic that from one to two and a half per cent. of the infants suffered from a colon infection of the urinary tract. These authors found that the infection did not limit itself to the bladder but more often involved the pelvis of the kidney, and sometimes the kidney itself.

Besides the colon bacillus, there are many other organisms capable of producing cystitis and pyelitis. Some of these organisms are streptococcus, staphylococcus albus, gonococcus, proteus, tubercle bacillus and typhoid bacillus. Of ten cases observed by Mellen, eight were due to the colon bacillus, the other two to the staphylococcus albus. It would appear that in infants there is a much greater likelihood of bacteria setting up an inflammatory process than in older children or adults. Since the colon bacillus is by far the most frequent source of infection of the urinary tract in infants, this paper will deal with that form of infection.

What then is the source of this infection? The great preponderance of females suffering from this condition, 90 to 95 per cent. has lead to the supposition that the infection results directly from contamination from the rectum. The close proximity of the urethra to the anus, the short urethra of the female, and the frequent contact with the rectal discharge, together with the habit of wiping with the diaper from behind, forward, lends a very plausible explanation.

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*Read before the Minnesota State Medical Society, October, 1910.

Box found that cases of colicystitis and bacterurea were much more common than cases in which the signs of a pyelitis were present. He also noticed the colon bacillus present in the urine of children suffering from thread worms, the ovae and the worms themselves were in some cases found in the bladder. "The organism being motile, further facilitates its progress in the urinary tract so that it is possible to gain access to the pelvis of the kidney without urinary stagnation being present." The colon bacillus grows preferably in alkaline or neutral media, but can also grow in acid urine. "The acidity of the urine is inimical to most other forms of bacteria, hence the colon bacillus is often found in pure culture." That the infection may occur through the blood stream and be eliminated by the kidney is thought by some observers to be possible. That this is not a common source of infection has been proven by Escherich and Wunchheim, since repeated examinations of the blood were almost always negative.

Wreden demonstrated the possibility of the colon bacillus wandering through the rectal wall and passing to the bladder wall. This is made possible by some injury to the rectal epithelium. The great frequency with which in many cases a cystitis followed close upon the heels of an acute colitis, is at least significant. Escherich believes that a certain number of infections, especially in boys occur in this way.

That the colon bacillus may be present in the bladder without any apparent inflammatory reaction, I have demonstrated in a number of cases. The acute inflammatory symptoms are induced in these cases by a general lowering of the vitality or by local irritation produced by toxic products eliminated by the urine. The frequency with which cystitis and pyelitis follows or complicates the acute infectious diseases, lends weight to this view. I have also seen relapses follow exposure or indiscretions in diet.

Box believes that incontinence, especially in girls, is frequently due to a bacterurea and a mild colocystitis. I have recently demonstrated the colon bacillus to be constantly present, together with some pus cells in the urine of a young girl suffering from chronic incontinence.

Pfoundler demonstrated that the blood of these cases, especially those suffering from an acute infection with fever will produce a clumping of a culture of colon bacilli, just as the blood of a typhoid after the manner of a Widal, produces clumping of the typhoid bacilli.

That the antitoxine produced in the body against the colon bacillus is of a transient nature is demonstrated by the great disposition of these cases to relapse.

All of my cases were females. Some of these occurred in my own private practice, but the majority were seen with other physicians in consultation.

The ages of the patients varied from five months to eight years. Only two of these cases were above four years.

Eight cases were one year and under.

Fourteen cases were between one and two years.

Three cases were between four and eight years.

Of the eight cases under one year, three were on the breast at the time of the attack. Of the whole number, sixteen cases had had the breast either in whole or part during the first year. Nine cases either followed or complicated an acute intestinal disturbance, In eight cases there were more or less symptoms pointing to the bladder. These symptoms in all cases had been overlooked by the attendants.

In the other seventeen cases there were practically no symptoms pointing to the urinary tract and the diagnosis was made wholly by exclusion and the urine examination.

In some cases the urine was moderately turbid and in others the sediment, consisting largely of pus, amounted to two to three per cent. of the urine passed. In Case three, a girl of eight years who had had intermittant attacks of fever for several weeks, some specimens of urine were perfectly clear, showing under the microscope scarcely a pus cell. This condition existed sometimes for a whole or part of one day when suddenly the next specimen would contain pus to an amount of one to two per cent. of the amount passed. Such a condition must have been purely pyelitis, there being little irritation of the bladder at any time. During the intervals when the urine was clear, there was marked tenderness upon pressure over the left kidney.

Cases 22 and 24 followed directly an attack of measles. In Case 22, twenty-four hours after the temperature from the measles had reached normal there was a sudden chill and the temperature rose to 105. There was no discomfort except that the child was extremely nervous. within three hours the temperature had again reached normal. It remained practically normal during the night and the following day about the same time as on the previous one, the temperature rose again to 105 and again within a few hours reached normal. This was repeated on three successive days. In the meanwhile the urine was examined and found at first to contain only a very few pus cells and some motile bacteria. Two days after, the urine was loaded with pus.

In Case 24, the temperature at the end of ten days after the onset became normal for 24 hours. At the end of this time the temperature rose to 103 and after 24 hours, both ears began to discharge. The temperature, however, in spite of the free drainage persisted so that at the end of 18 days it rose to 105 and there was some diarrhea with straining and the skin was extremely pale. There were no symptoms pointing to the urinary tract, unless the straining was due to cystitis. An examination of the urine revealed a great amount of pus with many pus casts, so that there was also an involvement of the kidney itself. At the present time the urine is clearing up and after three weeks the temperature, the doctor informs me, is practically normal.

Another case occurred during the course of a broncho pneumonia which followed close upon an attack of whooping cough. This case, a breast baby of eleven months had had stools. It afterwards developed that the mother was already three months pregnant. In this infant the temperature persisted after all evidence of the pneumonia had passed. There was evidence of extreme discomfort as the baby cried almost incessantly and sat swaying its body from side to side and backward and forward for hours at a time. When the nurse was told to watch her closely in regard to the passage of urine, she found that a little urine was expelled every few minutes with much straining which when examined was found to contain a large amount of pus and motile bacteria.

Symptoms and Course.—In many cases there are no symptoms pointing directly to the urinary tract; this is particularly true when the pyelitis is the primary condition, In these cases, fever is often the only constant symptom. This may be exceedingly high, reaching 105 or even 106. The temperature may remain high only for a short time and then drop quickly to normal or nearly normal, when after a few hours it may again rise to a high point. During the exacerbation the infant is usually very restless, there may be vomiting and intense palor of the skin. During the interval when the temperature is down the infant may seem well, takes its food and plays as if perfectly normal. In other cases which have gone unrecognized for some time, the condition assumes the character of a typhoid and in fact it is many times treated as such. The fact that many cases are preceded or even attended by offensive stools has further encouraged this mistake. There is also not infrequently in cases of pyelitis, tenderness in the epigastric region.

Case five, baby C., age four years, breast baby, three months. One year had whooping cough and pneumonia, from which she apparently entirely recovered and was well afterwards for one year. Six months ago she had an attack of what was diagnosed as typhoid fever. The fever ran about four weeks but was not severe. After that she was fairly well for several months. One month ago she had frequent urination with fever which had persisted until the time I saw her. The urine was cloudy with dense precipitate which showed under the microscope many pus cells and motile bacteria. An examination of the blood gave a negative Widal.

Case 14, baby P., age 13 months, normal birth, breast fed. No infectious diseases. At nine months had slight digestive disturbance from which she soon recovered. Six days before I saw her she had high fever, 104, which has persisted, ranging from 100 to 104. The baby lay in a listless condition. The tongue was coated and there was little appetite. The skin was very pale and at times cold. Stools slimy but not otherwise bad in character. Lungs normal except slight roughness in breathing in left side under scapula. Heart normal but rapid. Abdomen, some tenderness on pressure over the left epigastric regions. Some urine secured by catheter; turbid, contained much pus and motile bacteria. She was put upon urotropine with plenty of water. Her doctor informed me that after a couple of weeks the temperature disappeared and the urine gradually became normal.

In other cases the symptoms take on a pronounced nervous type. So severe are these symptoms that I have seen several cases where a meningitis was thought to be present. There may be dilirium and at times opisthotonos. These symptoms are more liable to occur in infants where there is an acute cystitis with severe tenesmus which may and usually does go entirely unnoticed. The symptoms most noticed are those of a general nervous character. Cases of severe cystitis which occur coincident with a colitis may lead to a mistaken idea as to the extent of the intestinal involvement, owing to the straining and excessive fever present.

Case 10, Sept. 10, 1908, baby W., Fargo, N. D., female, age 16 months. Breast for 10 months. Had always been well until about two weeks ago, had vomiting and diarrhea with considerable temperature. She was taken off milk for a few days and apparently completely recovered. Milk was resumed when the stools became bad again. During the past two days, she has been apathetic, lies with eyes closed and skin very pale, the breathing deep and sterterous, temperature and pulse high. At intervals there are spasmodic attacks, the head is drawn back together with a general muscular rigidity, the eyes turn upward so that only the sclera can be seen. After a short interval the muscles again relax, the infant sinks into a stupor from which she can be aroused with difficulty. She takes little if any food. Upon examination I found none of the cardinal symptoms of a meningitis. The reflexes were, however, much exaggerated. Upon very close observation for some time the diaper having been removed, it was noticed that every time she had one of these "attacks" she passed urine with much straining. A little of the urine was secured and examined microscopically when a few pus cells and many motile bacteria were found to be present. The urine was clear, amber and acid in reaction.

The doctors were rather skeptical that so small an infection in the urine could produce such profound nervous symptoms, so I made a lumbar puncture. The serum was clear and upon incubation was found to be sterile .After two or three days upon urotropine the baby had entirely recovered.

Case 20, Jan., 1910, baby N., age 10 months, female. Always well until one week ago she had high fever with green and offensive stools, there was much prostration. The infant was put upon greatly restricted feeding and the stools and temperature gradually improved. Yesterday without apparent cause, there was an acute exacerbation of the symptoms, the temperature was very high and the infant lay in a semi-stupor, moaning at intervals and at these times there was much straining so that the rectum protruded. I saw the infant in consultation on the evening of the second day after the acute exacerbation. Upon observation I found that with each attack of tenesmus which occurred every few minutes, there was a small amount of urine passed which the straining persisted and the rectum protruded slightly. Some times a small amount of mucous or fecal matter passed. On examination of the urine which was turbid and acid in reaction, showed many pus cells and motile bacteria. The doctor informed me that this case was rather slow in convalescing but that the urine in the course of a few weeks cleared up. That the acute exacerbation was due to the cystitis there can be no doubt.

In cases where there are marked nervous symptoms it is always well to examine the ears as well as the urine, for symptoms pointing to the ears may be present as a result of a cystitis without any middle ear involvement, (Case 1). In three cases I have seen a coexisting otitis media, (Cases 21, 22, 24).

In many cases the infection runs a chronic course with acute exacerbations at irregular intervals. During these exacerbations the symptoms are those of one or more of the forms already discribed. One of these, (Case 5) had been treated several months previous to my seeing her for typhoid fever. At the time I saw her she was running a fever not unlike a typhoid, but an examination of the urine revealed many pus cells and colon bacilli. An examination for Widal was negative. Another case (14) had been treated for recurrent attacks of grippe. A pretty constant symptom in these chronic cases is palor of the skin which assumes a rather muddy color. There is usually some greater frequency of urination than normal, and in some, the condition passes for simple incontinence. There is usually some redness about the genitals in these cases and the mother will inform you that the infant is constantly chafed. I have observed that many of these chronic cases are habitually constipated.

Exacerbation in these chronic cases are induced by indiscretion in diet, "taking cold" and any condition tending to lessen the general vitality, the protective antitoxine in the blood being evidently rather feeble.

The pathological changes in the mucous membrane are according to Langstein, that of an acute catarrh manifested by redness, infiltration and swelling of the mucous membrane which is covered with mucous, containing many pus cells and bladder epithelium. In chronic cases there is a thickening and pouting of the mucous membrane. In extremely severe infections there may be ulceration and hemorrhage.

Diagnosis.—The routine examination of the urine in all cases will reveal the cause of many otherwise obscure fevers in infants. The appearance of the urine is not to be depended upon in making a diagnosis, as many times it is quite clear, of a normal color and usually acid in reaction. Where there are many bacteria, the color is turbid and where pus in any amount is present, there is a precipitate. The urine should always be thoroughly centrifuged when clear, as in cases of primary pyelitis there may be only an occasional pus cell present and the bacteria may be apparently absent at first.

In cases of bacterurea of long standing there may be now and then acute exacerbations which after a few days or weeks subside so that the temperature is normal and there is little irritation. In these cases there is usually some local reddening about the meatus and the urine always contains bacteria and a few cells.

In these chronic cases there may be extensive desquamation of bladder epithelium as occurred in one of my cases, (14).

The presence of many pus casts indicates, of course, an involvement of the kidney itself. It is safe rule in all obscure fevers especially in female infants to examine the urine, not chemically alone, as there may be hardly a trace of albumin, but after thoroughly centrigufing, microscopically as well, since not infrequently the finding of only an occasional pus cell with the presence of motile bacteria and an acid urine will give the key to the existing pyelitis.

Prognosis.—Of the 84 cases observed by Goppert, ten died, i. e., 12 per cent. Of my 25 cases, none have as yet sucumbed, but in case 24, where there is undoubtedly some involvement of the kidney itself, the ultimate prognosis is doubtful.

In cases of mixed infection where upon the slightest provocation, recurrence of the pyelitis occurs, the ultimate prognosis must also be doubtful.

In most cases of colon infection which are early recognized and treated, the prognosis is good and recovery usually occurs in from one to four weeks.

Treatment.—The giving of large amounts of alkaline water is of the first importance. Frequently there is great thirst attending the fever and the infant will take large amounts of water. The diet should be of a bland character. Urotropine or salol in full doses are the two drugs giving the best results. They may be given alone or combined, in stubborn cases. In an acute cystitis where there is much desquamated epithelium with severe tenesmus, washing the bladder with a one-half per cent. solution of silver nitrate and immediately neutralizing it with salt solution, gave in one or two severe cases marked and prompt relief. As a means of prevention, rectal discharges should be removed as soon as possible and the genitals, especially in female infants, cleansed by sponging from before, backward, as it is easily seen how fecal matter could be easily introduced into the mouth of the urethra when the above process of cleansing is reversed. Since constipation was constant in many of my cases, this should be at once corrected. The general condition of the patient must be carefully augmented as a purely local treatment will be disappointing and relapse will be certain if the general vitality remains below par.

Case Histories.—July, 1902, Case I., E. C., female, age six months. Fed on malted milk since birth. History uneventful until one week ago, when it had offensive stools. Several days after, the temperature was much elevated at times and the child had violent attacks of crying as if in pain. During these attacks the mother noticed that the head was retracted and the child put her hands to her ears. Thinking there might be an otitis, I had an aurist examine the ears with negative results.

The urine was turbid and acid in reaction, with many pus cells. At this time I knew little about the colon infections of the urinary tract and the child recovered promptly on a buttermilk diet without medication.

Sept., 1906, Case II., V. M., female, age 16 months. Mother has noticed for some time that the urine is cloudy and has had great difficulty in preventing excoriation of the skin around the genitals. The temperature is frequently above normal. The child is pale and flabby, eats badly and the bowels are habitually constipated. Examination of urine, turbid, acid in reaction, trace of albumin and many pus cells and motile bacteria. The child was given water freely with full doses of urotropine and the urine rapidly became normal. The general condition also markedly improved.

April, 1907, Case III., E. M., female, age eight years. Has always been highly neurotic. History up to one mouth ago uneventful. The child was much undersized and poorly nourished.

About one month ago there was loss of appetite and at times the temperature was high. No regular record had been kept. There was some discomfort upon urination and at times the urination was frequent. There was also some tenderness over the bladder and at times pain in the region of the left kidney. The temperature and loss of appetite had been so persistent that the father who was an oculist had thought of a probable typhoid.

Examination revealed temperature of 102, some tenderness over bladder and left epigastric region. Urine, cloudy, which upon standing gave a dense precipitate. This precipitate proved to be pus. Some specimens were perfectly clear, showing under the microscope only an occasional pus cell. The next specimen would perhaps be densely turbid, precipitating upon standing, some times an amount of pus equal to one-quarter the amount of urine passed.

Upon full doses of urotropine with a liberal amount of alkaline water, the symptoms subsided and the urine became normal. During the following two years there were several relapses which however, promptly cleared up.

Case IV., E. T., female, age two years, breast until 16 months. History uneventful until two months ago. At this time, pale, she lacked appetite, slept badly and cried when moved. There had been nothing to call attention to the urinary tract except that the skin in the region of the genitals was excoriated. There was temperature varying from normal to 104.

Urine slightly turbid; acid; albumin trace, and under the microscope many pus cells and motile bacteria. Upon urotropine and proper diet the general nutrition rapidly improved and the urine became normal.

Case V., April, 1908, B. C., female, age four years. Breast three months. At one year had whooping cough and pneumonia. During the following two years was normal. Seven months ago had an attack of fever which was diagnosed as typhoid. The fever was of an intermittant character and lasted several weeks. Since that time the child has been fairly nourished but pale. Four weeks ago child began having frequent urination but no fever. One week after, the temperature rose to 104 and the frequent and painful urination persisted. Examination of urine at this time revealed much pus and motile bacteria. She was given urotropine in full doses and her physician informs me she rapidly recovered.

Case VI., July, 1908, E. P., age 13 months, breast two months. Baby is pale with flabby musclature. Stools generally pale and constipated. Stools now loose. Baby cries much and has temperature varying from normal to 101; this has persisted for several weeks. Urine turbid, acid, albumin trace, many pus cells and motile bacteria. Under proper modification of diet with liberal amounts of water and full doses of urotropine, the symptoms subsided and urine became normal.

Oct., 1908, case VII., E. W., female, age 18 months, breast nine months. Baby has never taken cow's milk well and has had several attacks of dyspepsia, since being weaned. Five weeks ago had severe attack of indigestion attended by green foul smelling stools, the temperature was at the onset, 102. Upon a "starvation diet" for 36 hours, the temperature became normal and after a few days on gruel, the former diet was gradually resumed. Since then the stools have been good but the baby has remained rather pale.

Yesterday the temperature suddenly became elevated and the baby was very restless. Castor oil was given, the mother believing that the intestinal tract was the cause of the fever. The stools were, however, normal and the temperature persisted. An exhaustive physicial examination revealed nothing to occasion the fever which was on examination, 104. No symptoms referable to urinary tract. Urine neutral, clear, no albumin, many motile bacteria and considerable number of pus cells. Upon urotropine the symptoms rapidly subsided. Since that time this infant has had several relapses during which time much pus was to be found in the urine.

Case VIII., Aug., 1908, baby E., female, age three months, breast for two weeks then put on modified milk, which it took badly. Since, it has had a variety of foods, none of which it has been able to digest well and the stools are green and frequent.

The temperature during the past week has been high at times but no record had been kept by the attending physician. Upon examination, the temperature was 104. The baby screamed almost constantly as if in pain. Close inspection revealed a small amount of urine passed with much straining, being frequently attended with some bowel movement.

Examination of urine revealed many pus cells and motile bacteria. The reaction was acid.

A wet nurse was secured and the baby given urotropine in frequent small doses. Recovery was slow but uninterrupted.

Case IX., August, 1908, baby K., age five months, breast three months. Has had difficult digestion since being weaned, the stools being frequently green and curdy. After modifying the milk, the stools became normal but there still continued to be some elevation of the temperature. An examination of the urine revealed a considerable number of pus cells together with many motile bacteria. Under urotropine the temperature became normal within a week and the pus cells and bacteria disappeared from the urine.

Case X, Sept., 1908, baby W., Fargo, N. Dak., female, breast for ten months. Always well until two weeks ago had vomiting and diarrhea. It was taken off milk for a few days and the condition became apparently normal. One week ago, milk was resumed and the stools became bad and there was considerable temperature. Two days ago the baby began having "attacks" in which the eyes would roll up, the head was retracted and at times there was slight opisthotonos. After a short time, one to two minutes, the muscles relaxed and the child would sink into a profound stupor. The "attacks" occurred at irregular intervals of from 20 to 30 minutes.

The nervous disturbance was so profound that the attending physician as well as the father who was himself a physician thought that a meningitis might be present.

When I saw the child the condition was as described above. The cardinal symptoms of meningitis, however, were mostly absent. Upon close examination the diaper having been removed, I found that with each "attack" she passed a small amount of urine with much straining. Some urine was secured and examined microscopically. The examination revealed a small number of pus cells and many motile bacteria, (reaction acid).

The attending physicians were skeptical that such profound nervous symptoms could be produced by a cystitis, so a lumbar puncture was made. The fluid was clear and sterile. Under urotropine the patient was apparently well in a few days.

Case XI., Sept., 16, 1908, G. B., female, age eight years, breast one year. Has been well with exception that she has attacks of vomiting at more or less regular intervals. Patient extremely nervous, (mother neurosthenic), has some incontinence of urine which is at times greatly exaggerated. Physical examination negative. Urine shows trace of albumin and many pus cells and motile bacteria.

Case XII., Oct. 6, 1908, V. J., female, age one year. Breast six weeks. Had condensed milk for three months and since modified milk. The stools have been pale, constipated (soap stools) and the urine ammoniacal. Two days ago had an attack of vomiting and diarrhea with green stools, temperature 100.

Upon water for 24 hours the stools became normal but the temperature increased, being on the second day, one hundred two and one-half. Examination of urine revealed many pus cells and motile bacteria.

Case XIII, July, 1908, B. H., age 16 months, female. Had breast for 11 months. It was then given whole cow's milk and had severe indigestion with convulsions. Stools have been very constipated and of the fatty soap character. The baby is pale and the general musclature flabby. Upon a proper modification of the diet, the stools became normal and the general condition of the patient improved.

Two months later, had an attack of fever without any apparent cause. Urine, acid; pus cells and bacteria in abundance. Condition promptly cleared up under urotropine.

Case XIV., Aug, 28, 1908, B. P., female, age 13 months, breast one year. At nine months had slight digestive disturbance from which she soon recovered. Six days ago had high fever, 104. The temperature has since ranged between 100 and 104. The stools, her physician says, have been good. The child when seen in consultation was listless, skin pale and rather cold. An exhaustive physical examination revealed nothing to account for the continued fever. Typhoid had been suspected. Some urine was secured and showed a great number of pus cells and many bacteria. Under urotropine the condition cleared up, her physician informed me, after two to three weeks.

Case XV., Nov., 1909, L. S., female, age three years, breast one year. Always well until a few months ago, when she had an attack of fever which her physician thought was grippe. Within a few weeks she had three such attacks.

During the past 24 hours the child has cried almost constantly as if in pain and there has been considerable fever. The mother has noticed that she has passed urine frequently but has not complained of pain in region of bladder. When examined, temperature was 104, pulse 140. Skin was very pale and cold. Physical examination revealed nothing to account for fever. Urine, acid; albumin trace; pus cells and squamous eptihelium abundance.

Under urotropine, temperature became normal and the urine cleared up promptly. Since then there have been two rather severe relapses which cleared up promptly under treatment.

Case XVI., Nov., 1909, E. D., female, age five months, breast five months. Had extensive eczema while on breast. On cow's milk is very constipated. Stools otherwise normal. During past few days has been restless and has slept badly. Today has suddenly developed high temperature, 106 plus. When I saw the child there was no apparent cause for the fever. Urine showed many pus cells and motile bacteria. The temperature rose on two successive days to 105 plus and then was normal in the interval. Upon urotropine the condition soon became normal.

Case XVII., Jan. 1st, 1910, baby B., female, age 11 months, breast until present time. Had always been healthy until one week ago when it developed pneumonia. When seen in consultation there was a small pneumonic area in right lung; the temperature was 104 three-fifths. The stools at this time were green and the nurse said they had been so for several days. Jan. 5th, I saw her again as the temperature continued high and the baby cried almost constantly. An examination revealed an apparent resolution of the pneumonia so the breath sounds were practically normal. The baby cried as if in pain and sat swaying its body backward and forward, the nurse said, for hours at a time. The skin was extremely pale. The stools were still green and rather frequent.

Upon close inspection it was found that the urine was voided every few minutes in small amounts with much straining. An examination revealed a urine very turbid and acid in reaction, albumin trace, many pus cells and motile bacteria. It was found that the mother was three months pregnant so the baby was weaned and it was with great difficulty that it would take any other food. The temperature kept up and in spite of the urotropine the. tenesmus was persistent. Finally a wet nurse was obtained for a short time and the condition gradually improved. In this case I made several instillations into the bladder of a one-half of one per cent. solution of silver nitrate with considerable relief of the tenesmus.

Case XVIII., Jan. 2nd, 1910, H. P., female, age 11 months, breast until present time. History uneventful up to ten days ago when she had fever and slight disturbance of digestion. She cried a great deal, especially before passing urine which was rather frequent. During the past week, the temperature which was taken daily by her physician, has ranged between 100 and 104. The skin is very pale and there is slight edema. Her physician had been unable to account for the fever and had examined the urine the day on which I saw her and found a few pus cells and motile bacteria. Upon urotropine, the condition rapidly cleared up.

Case XIX., Jan. 20th, 1910, L. M. D., female, aged two years. One year ago this infant had an attack which puzzled her physician for some time but which was finally diagnosed as pyelitis. After a short time she recovered. At this time she has fever without any apparent cause. Urine shows a few pus cells and many motile bacteria. Under urotropine the condition promptly cleared up.

Case XX., Jan., 1910, baby N., female, age 10 months, breast fed. Has always been well until one week ago had an acute colitis. Stools were frequent and foul, with considerable blood, the temperature was high and there was great prostration.

The condition had gradually improved so that the stools were much better in character and much less frequent until yesterday there was an exacerbation, the temperature rose to 104 and there was a great deal of tenesmus, although as the doctor said, the stools looked almost normal.

When I saw the child on the evening of the second day after the exacerbation, she lay in a semi-stupor, groaning as if in pain. Upon close observation the diaper having been removed, it was noticed that she was straining almost constantly so that at times the rectum protruded and every few minutes a small amount of urine was passed. Some of this was secured and examined and found to contain much pus. The convalescence in this case was, her physician informs me, rather slow but progressive, lasting weeks. That the exacerbation in this case was due to a pyelo-cystitis there can be no doubt.

Case XXI., Feb. 14th, 1910, baby F., age 20 months, female, breast three months. Four months ago had an attack of colitis which was severe and lasting several weeks. At that time, I examined the urine which was clear. Two weeks ago she had an acute tonsilitis which was so severe that her physician believing it to be diphtheria, gave her antitoxine. She rapidly recovered from the tonsilitis and was well until two days ago when she suddenly developed high temperature, was extremely restless and cried a great deal. No cause could be found for the symptoms. The urine was not examined by her physician. On examination I found the baby extremely restless and pale, would awake from a sound sleep and cry out as if in pain. The temperature varied from normal to 104. Physical examination negative. Stools good, urine turbid, acid in reaction, many pus cells and motile bacteria. Under urotropine the condition rapidly became normal. Since that time there have been several relapses but of much less severity than the first.

Case XXII., March, 1910, J. R., female, age four years, breast fed for one year. Has always been fairly well but rather pale and of flabby musclature. Developed measles four days ago. The course, however, was rather mild. Cough during the first two days rather severe but nothing to be found in lungs On the afternoon of the 4th day of her eruption when the temperature had already reached normal, there was a sudden chill and the temperature ran up to 105. Nothing could be found in the lungs or throat to account for the sudden fever. There were no symptoms except that the child was extremely nervous and perhaps passed urine more often than normal. There was no apparent local irritation. In the course of a few hours the temperature again reached normal. The following day the temperature again reached 104, without apparent cause, urine clear, acid in reaction, slightly turbid with cold acitic acid. Under the microscope an occasional pus cell and motile bacteria. On the following day the urine was loaded with pus cells. The condition was undoubtedly a primary pyelitis. The pus in the urine persisted in varying amounts for several weeks but finally disappeared.

Case XXIII., Nov. 10th, 1910, D. H., female, age 15 months breast five months. Had slight rash few weeks ago which was perhaps a mild attack of measles. Two days ago had an attack of indigestion with vomiting, the temperature was 101. Upon a "starvation" diet, the stomach and intestinal condition cleared up, but the fever still persisted. Urine showed a considerable number of pus cells and bacteria. Under urotropine the temperature disappeared in a few days as also did the cells and bacteria from the urine.

Case XXIV., April 5th, 1910, B. S., age 24 months, bottle fed. Has been badly nourished since birth but has had no acute illness.

Sixteen days ago came down with measles. This was very severe. The temperature which was high at first, gradually dropped until it reached normal on the 10th day and remained normal for one day. The temperature again rose to 103 plus and both ears began to discharge. The temperature, however, has been persistent so that today it is 105 plus. There has been no history of bladder irritation. There has been some diarrhea with much mucous. Examination of the urine shows much pus and some pus casts.

The doctor informs me that under urotropine the condition is steadily improving and the pus and casts have practically disappeared from the urine.

Case XXV., Aug. 9th., 1910, G. S., age nine months, breast. Baby has always been well until two weeks ago began to have loss of appetite and vomited occasionally. Five days ago began vomiting after every feeding and even teaspoonful doses of water were vomited. Temperature has been normal or subnormal. Aug. 14th, began taking buttermilk today and does not vomit. Aug. 15th, cries as if in pain and passes urine frequently. Urine shows pus cells and motile bacteria. After a week on urotropine the condition became normal.

Lowry Building, St. Paul, Minn., Nov. 18th, 1910.

INFECTIONS OF THE URINARY TRACT BY BACILLUS COLI IN INFANCY AND CHILDHOOD.*

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Infections of the bladder, ureters and kidneys by the colon bacillus are the commonest of all infections of the urinary tract in childhood. The condition may occur at all ages—from infants a few weeks old to children in their teens. It is usually

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uncomplicated, the cases where it is secondary to other urinary lesions being exceptional.

The sex incidence is very characteristic:

Morse in 50 infants found 30 females, against 20 males.

Abt found 21 females, against one male.

Escherich found 10 females, and no males.

Finklestein found seven females, and no males.

In 18 consecutive cases of my own there was only one male.

These figures strongly suggest the ascending character of the infection.

The disease may reveal itself in childhood either as an acute or as a chronic condition. In the acute infection either the constitutional or the local symptoms may be predominant. In the chronic infection the local symptoms may almost sink into abeyance, and the constitutional symptoms may remain slight for a long period. The acute infections show a great tendency towards complete recovery, but relapses occur occasionally. The chronic infections show periodic exacerbations of symptoms, either local or general.

Acute Infections with Constitutional Symptoms.—Cases of acute infection in which the constitutional symptoms predominate may come under observation as sharp febrile attacks accompanied by headache, malaise, and often by vomiting. Shivering, sometimes amounting to actual rigor, is present and recurrent, particularly in older children; it is very characteristic of the disease. The onset is frequently abrupt. The skin may either be hot and pungent or moist; the pulse is rapid and the respirations are hurried, but not out of proportion to the pulse rate. Herpes may appear on the lips. Frequently the abdomen is moderately distended; the edge of the spleen may just be felt and the bowels may be irregular. Nervous manifestations are marked in some instances. These take the form of broken sleep and extreme restlessness, muscular twitchings, and, in older children, delirium. In infants slight stiffness of the neck has often been noticed accompanied by sharp cries and sometimes even by convulsions. The temperature chart assumes various forms. The pyrexia may be sustained for several days and then abruptly terminate, as in lobar pneumonia, or considerable oscillations of temperature may be present with chills and sweats, suggesting either a malarial of a pyemic condition. The course of the disease may be marked by intermissions and relapses.

Constitutional disturbances with the foregoing characteristics are said to be more common when the urinary infection occurs as a pyelitis than when the less absorbent mucous surfaces of the ureters and bladder are involved; but in most instances the clinical aspect of the disease is rather that of a cysto-pyelitis, a sharp differentiation of the renal from the vesical infection being impossible.

Acute Infections with Local Symptoms—Acute infections in which the local symptoms are obtrusive are easier of diagnosis. As a general rule micturition is frequent and painful, incontinence being early developed. Vulval inflammation is often present. If the bladder is chiefly involved the child screams during the passage of urine and may attempt to evade the act. Tenderness is present in the hypogastrium and perineum; it may also be elicited in the neighborhood of the bladder by rectal examination. The lower parts of the abdominal wall may be rigid and rigors may accompany micturition. When the pelvis of the kidney is involved, pain may be referred to the subcostal and epigastric regions—rarely, in my experience, to the loins. Slight rigidity of the upper part of the abdomen may be present, and it may even be possible to determine that one or other kidney is somewhat enlarged and tender. The renal enlargement is sometimes transitory or intermittent, and in such cases it may be due to distension of the pelvis of the kidney. In some instances the intermittent discharge of pus in the urine has confirmed this view as to its nature.

Chronic and Persistent Infections—These are mostly met with in older children, but are occasionally seen in infants. Fortunately they are much more rare than the acute varieties of the disease. They assume the form of a persistent bacilluria with but slight signs of inflammatory reaction of the urinary tract and with little constitutional disturbance. Although incontinence of urine may have existed in the earlier stages of the infection it does not always persist. Children who are the subjects of this chronic infection are poorly nourished and may show slight elevations of temperature which persist over long periods. Rigors or shivering are mostly absent and there is little or no complaint of local pain or tenderness. Some of the sufferers are shy and nervous, others are dull or apathetic.

Periodical exacerbations of symptoms are very apt to occur. These may assume the form of "bilious attacks" characterized by headache and nausea or vomiting, or they may occur as "feverish attacks" which are often attributed to slight bronchitis or to bowel disturbance. Complaint may also be made of pains in and slight swelling of the joints, supposed to be "rheumatic." If the joint swelling is persistent the presence of tuberculosis may be suspected. Transitory fidgetiness and inco-ordination, very suggestive of chorea, have occurred in some of my patients. The resemblance between the recurrent attacks of sickness and the disease known as periodic vomiting has been emphasized by Dr. J. H. Thursfield, My experience has taught me one important fact, and that is, that ultimately these patients with chronic bacilluria may pass into a condition of uremia. I had one child under observation for three years. Bacilluria persisted all the time and at the end of the period she developed night blindness, which an ophthalmic surgeon conjectured must be congenital, although there was no history of the defect in the family. Ultimately a condition of air hunger supervened and she died in coma. The result of the post-mortem examination is mentioned below.

Morbid Anatomy.—Although the morbid anatomy of urinary infections by the colon organism is fairly well known in the case of the adult, there are very few observations on the conditions present in childhood. In a case recorded by Abt cystoscopic examination of a baby girl, aged 13 months, is said to have revealed a normal bladder with pus exuding from both ureters. The same observer records a fatal case in an infant six weeks old, in which a fused kindey was found containing pus and miliary abscesses. Our knowledge of the pathological conditions which underlie or result from chronic bacilluria is also very imperfect, but I think there are grounds for the belief that the explanation of certain obscure cases of hypertrophy and dilatation of the urinary bladder and ureters without obstructions, and also of certain cases of hydronephrosis and renal atrophy, may be found in the occurrence of these infections. The post-mortem examination of one of my chronic cases revealed wide spread changes in the urinary passages. The right kidney was shrunken and its pelvis dilated; the left was swollen, mottled, very coarsely granular, and partly hydronephrotic. The ureters were dilated and thickened, the bladder hypertrophied from chronic cystitis. There was no obstruction in the urinary passages.

Diagnosis.—The diagnosis of these urinary infections must be made by an examination of the urine itself. Drs. Dudgeon and Ross conclude that although the opsonic and phagocytic indices of the patient's blood are low, they are not very reliable; also that the agglutination test is of no value. They point out that normal human serum has no bactericidal effect on the bacillus coli.

The urine is acid. It is opalescent, and when shaken may show a "mucous sheen." When it is allowed to stand a slight sediment may fall; sometimes the sediment is rather abundant and consists of pus and epithelial cells, more rarely only a faint mucous cloud separates, containing the bacilli in its meshes. The opalescence of the urine is not removed by acids like that due to phosphates and carbonates neither does it clear up on heating, which serves to exclude the milky uratic urine often passed in childhood. The effect of boiling is rather to increase the turbidity owing to the precipitation of a small amount of albumen, but this precipitate, being slight, is often overlooked. Filtration only diminishes the opalescence in so far as it removes epithelial and pus cells. The bacilli pass through.

Microscopical examination shows, in the acute cases, pus and epithelial cells from various parts of the urinary tract, a few casts may possibly be recognized and swarms of bacilli which are more or less actively motile. In cases of chronic bacilluria the cells are scanty, but a few polymorphs are always found if the centrifuge be employed. Dr. Dudgeon has shown that the phagocytosis is feeble, the bacilli being extracellular—a fact which contrasts strongly with what is seen in cases of typhoid infection. The presence of casts points to infection of the renal parenchyma, but their absence does not prove that the kidney has escaped injury.

Differential Diagnosis.—When the symptoms of the infection are general or constitutional, the true cause is apt to be entirely overlooked. When the symptoms are local they are liable to misinterpretation.

Constitutional symptoms of acute onset may suggest the presence of an infective fever, of pneumonia, of cerebro-spinal meningitis, or of otitis. Constitutional symptons of a more chronic nature may give rise to a suspicion of pulmonary or glandular tuberculosis. The occasional exacerbations with headache and sickness may suggest periodic vomiting.

Urgent local symptoms, referred to the urinary apparatus, may simulate the presence of a calculus, whilst the persistent presence of pus in acid urine may cause suspicions of urinary tuberculosis to be entertained. The key to successful diagnosis is, as already mentioned, a routine examination of the urine in every case, coupled with the knowledge that, in childhood, by far the most common infections of the urinary tract is that due to the colon bacillus.

Pneumonia may be suggested by the rapid onset of fever with a chill, acceleration of respiration, and the occasional presence of labial herpes. But signs of pulmonary consolidation do not appear, the rapidity of respiration is only proportionate to the high fever present, and the chills or rigors are apt to be repeated.

Typhoid Fever may be simulated by the coincidence of fever with splenic enlargement and slight abdominal distension. But the course of the fever is different, the typhoid spots are wanting, there is no agglutinative reaction with typhoid bacilli, and the recurrence of chills or rigors in typhoid is decidedly uncommon.

Meningitis may be suggested by the restlessness, fever, headache, crying and slight stiffness of the neck noticed in some cases. But paralysis and coma do not supervene, and the fluid obtained by lumbar puncture is normal.

Several cases of the disease have been reported in infants where, on account of the restlessness, evident pain, screaming, shivering and fever, acute otitis media has been suspected and the drums punctured, but with negative results.

Turning to the more chronic cases, it is evident that continued malnutrition, which may be associated with slight febrile disturbance and unaccompanied by obtrusive signs of urinary inflammation, is calculated to raise a suspicion of the presence of some deep seated tuberculous focus in the mediastinal or abdominal glands or possibly in the lung. In such cases the urine should be carefully examined.

The presence of recurrent attacks of headache and vomiting, with lassitude, slight fever, abdominal pain or discomfort and some degree of constipation, may produce a condition which closely conforms to that of periodic vomiting. The resemblance is rendered more complete by the fact that the condition is more common in girls than in boys, and that the exacerbations usually pass off in a few days (J. H. Thursfield).

When the urinary symptoms are prominent the diagnostic problem is very different. The occurrence of pus in acid urine, coupled with signs of irritation of the urinary passages, naturally suggests the presence of calculus or of tuberculosis in the bladder or kidney.

With regard to urinary tuberculosis, it is fortunate that this condition is very rare in childhood. Calculus is more common, but does not occur with anything like the frequency of cysto-pyelitis due to invasion by the colon bacillus.

There is another condition which, in childhood, may give rise to dysuria, and this is appendicitis. When a pelvic abscess has formed, the symptoms, which consist of deep seated pain and frequent, painful micturition, may strongly suggest a primary cystitis. The true nature of affairs is revealed on making a careful rectal examination.

In countries where malaria is prevalent the chills and fever of colon cystitis may closely simulate malarial paroxysms.

In discussing and comparing the different methods of treatment which have been advocated it is important to bear in mind that in childhood many of the most acute attacks clear up spontaneously or yield to the simplest treatment. To get an idea of the efficiency of any particular method it should be employed in a chronic and persistent case. I believe that a failure to realize this is responsible for the discrepant accounts as to the virtue of various remedies which have been employed.

Treatment.—The main methods of treatment may be summarized as follows:

1. The administration of sufficient potassium citrate to make and keep the urine permanently alkaline.
2. Treatment by urinary antiseptics.
3. Treatment by serums and vaccines.

In my experience all that is necessary in the treatment of cases with acute local symptoms is the administration of potassium citrate in doses of 10 to 20 grains three or four times daily. With this may be combined an anti-spasmodic drug, such as belladonna or hyoscyamus.

With regard to the effect of urinary antiseptics accounts are discordant. Some observers claim successes with urotropine and others with sodium salicylate, but it is always in cases such as I have just mentioned—that is, those with acute local symptoms. To judge of the intrinsic value of antiseptic drugs they should be tried in the chronic persistent cases; their effects will then be found to be most disappointing. I have systematically used for long periods most of the antiseptics of the formalin type that is to say, hexamethylene tetramine (urotropine); its mathylene citrate (helmitol), which is supposed to combine the advantages of its three constitutents; and also its benzoyal derivative (hetraline). None of these had the slightest effect on chronic cases. I have also made trial of ammonium benzoate, sodium salicylate, and boracic acid, with no better results.

It is worthy of note that Dr. Dudgeon found from his bacteriological researches that urotropine, although highly effective against typhoid bacilli, was powerless against the common colon organism, and gave, in fact, a means of clinical differentiation.

Next, with regard to the use of serums and vaccines. Hitherto I have found it unnecessary to use these for any of my acute cases in children. In two cases of chronic bacilluria I have, with the co-operation of Dr. Dudgeon, given both autogenous vaccines and anti-*bacillus coli* serum a fair trial. No permanent improvement could be effected in either case, but incidently we discovered that washing out the bladder with the serum instead of with urinary antiseptics produced a marked, though temporary, diminution in the number of bacilli present.

Mr. Shattock and Dr. Dudgeon have at present in hand a scheme for the acclimatization for the lactic acid bacillus in the urinary passages in the hope that it may expel the colon organism.

There is one point in treatment which I believe to be important: Many of the older children have thread worms, and I have suggested elsewhere that possibly these parasites are actually the cause of an ascending urethral infection with the colon bacillus. The discovery of the worms or their ova, and effectual treatment, are therefore desirable. By this means incontinence of urine may be put an end to, even though bacilluria persists.

TREATMENT OF ACUTE AND CHRONIC AFFECTIONS OF THE URINARY TRACT IN INFANCY AND CHILDHOOD.*

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Infections of the genito-urinary system of children appear to be less frequent than similar infections of adults. This, no doubt, is partly due to the fact that children are not so liable to certain conditions of the urinary and genital tracts which are strong predisposing factors to the occurrence of these infections. There is no question that in adults the occurrence of stricture of the urethra, enlargement of the prostate, and central nervous lesions, all giving rise to obstruction of the natural outflow of urine, accompanied by the injurious back-pressure commonly present with them, are strong predisposing causes of these infections. Calculi in any part of the urinary tract, from the urethra to the kidneys, are similarly only too frequently attended by bacterial invasions; whilst there can be no doubt, I think, that gonorrhea is often the starting point of an infection with *bacillus coli*, the gonococci disappearing from the genito urinary tract long before the *bacillus coli*.

Although children are liable to all these conditions, they are not of nearly so frequent occurrence, and as predisposing factors of infection they are, therefore, not nearly so important.

There remain to be considered, however, those cases of what one may term autogenous infections, not dependent upon any gross disease of the urinary passages, nor accompanied by conditions interfering with the freedom of micturition.

With regard to the frequency of such occurrences I speak from a very limited experience, for I have only seen eight cases where the infection was present uncomplicated by other conditions, such as those I have just mentioned.

This is in striking contrast to the frequency with which I have met these autogenous infections, both acute and chronic in the case of adults. In the last two years alone I have seen 106 such cases in hospital and private practice.

No doubt this is accounted for in some measure by the fact that the acute infections show the same tendency to rapid sibsidence in children as they do in adults, and that many children are seen only by their regular medical attendants, or by physicians rather than surgeons. Still the disparity in numbers is striking, and leads me cautiously to suggest that these autogenous infections are not so common in children as in adults.

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Infections uncomplicated by other conditions, and where the *bacillus coli* is the only organism recovered from cultures, follow very much the same course as do similar infections in adults.

1. Acute infections are commonly ushered in by a rigor, which may be considerable or very mild in character. The temperature rises rapidly, more quickly and to a greater height than in adults; but I have seen one case of hyperpyrexia in an adult where the thermometer registered 108 degrees. A temperature of 104 degrees is not uncommon in children.

During the first twenty-four or forty-eight hours there is frequently no complaint of urinary symptoms, and the urine to casual observation appears normal.

But if the urine is closely examined it will be seen to have a certain sheen or lusture, which I am accustomed to compare to the lustre of shot silk, there is usually a faint but very distinct odor which is almost indescribable, the nearest I can approach to it being a mixture of the odors of weak carbolic lotion and rotting fish. On bacteriological examination the urine is found to be swarming with the micro-organisms. In this early stage there is little or no pus formation, and the urine is invariably acid in reaction, sometimes strikingly so. These two features—acidity and small amount of pus—persist throughout the duration of the case so long as the infection remains pure. With the addition of other micro-organisms, such as the *bacillus faecalis*, I have found marked pyuria and an ammoniacal decomposition in the bladder.

Very soon symptoms referable to the urinary tract manifest themselves. Frequency of micturition is often very marked, every half-hour both day and night being quite common. Pain, during and at the close of micturition, referred chiefly to the penis, is usual. Haematuria is not at all uncommon, varying from a mere staining of muco-purulent shreds, to a few drops of bright blood at the close of micturition, or even a decided bright red haematuria.

The infection in some cases appears to run riot throughout the whole urinary tract, one or both kidneys becoming involved. They may be felt to be enlarged and tender, and the patient complains of steady lumbar pain. It is in these cases where there was no doubt that the kidneys were involved, that I have noted the highest temperatures.

In adults these acute infections may be ushered in by other symptoms, the first to draw attention being some uneasiness of micturition, an acute epididymitis, or an acute prostatitis, and in three cases I have seen an acute urethritis with profuse purulent discharge as the first sign of the condition, giving rise to quite unwarranted suspicions of the patient's moral character. I have never seen an acute *bacillus coli* infection commence in any of these ways in children.

The course of the case is very similar in children to what I have observed in adults. Fortunately the majority of cases show a tendency to fairly rapid and complete subsidence. The fever lasts for a variable period, seldom for more than ten days or a fortnight, and the symptoms of pain, frequency of micturition, pyuria and haematuria usually disappear within a month. During the first week or ten days the child's condition may appear to be alarmingly grave, but I have not yet met with any cases of renal, prostatic, or testicular abscess in children.

2. **Chronic Autogenous Infections.**—Of the eight cases of autogenous infections in children, which is the limited number I have at my disposal, only three were definitely chronic in character. It is obviously rather dependent upon one's own view as to what should be termed chronic rather than acute cases. In these three instances I was unable to obtain any history of an acute attack, and the symptoms had been in evidence for more than six months before I saw the patients.

In these three cases the signs and symptoms were identical with those observed in adults—namely periods of illness alternating with periods of freedom from subjective signs, although when searched for quite typical symptoms were apparent. Fever was entirely absent during the periods of comparative health, and only a very slight rise of the thermometer was noted during the exacerbations of the disease, and then only at night. During the attacks the same symptoms are to be noted as in the acute infections, only much milder in character—namely, slight discomfort on micturition, usually penile in situation, slight increase in the frequency of micturition, slight abdominal discomfort, and a general appearance and feeling of malaise.

It is difficult in the case of small children to elicit from them a description of their own sensations without putting leading questions to them, to which you can get whatever answer you desire. But no doubt exists in my mind that these symptoms are all present in a very mild degree during the remissions of the disease, as they undoubtedly are in a definite form during the periods of exacerbation. Added to these symptoms must be the fact that the children were anemic and ill-nourished.

I have no doubt that there must be a considerable number of such cases under the treatment of medical men in general, perhaps from the very slightness of their urinary symptoms not recognized as what they are, and in some cases considered more suited for the treatment of a physician than of a surgeon. This would explain the small number of cases I can bring forward.

In this connection it may be well to emphasize the fact that during the periods of quiescence the urine may appear to be absolutely normal, and even in the acuter phases of these chronic cases may show very little naked eye evidence of the infection. A little of the typical odor which I have described, a little cloudiness in the urine, and a little deposit on standing may be all that is visible, yet, even at its clearest, colonies of *bacillus coli* can be grown from the urine, and in some cases the turbidity is due to the presence of the micro-organisms in amazing numbers.

This is exactly similar to the state of affairs in similar cases in adults. None of these cases are well; one of them has been under my observation for more than four years, one for two years, and the other for fifteen months. From my experience in adults I much doubt if they will ever be well, strictly speaking.

Bearing upon this question of the intractibility and incurable character of these chronic infections I will mention two cases.

The first, that of a child, now aged 14 years, whom I first saw in 1900. At that time he was suffering from uric acid storms, during which he passed immense quantities of cayenne pepper crystals with all the typical symptoms of vesical calculus. I cystoscoped him and found nothing wrong with the bladder. However, his bladder was opened suprapubically a little later, in the country, and from that date has persisted a chronic cystitis, The urine now is loaded with *bacillus coli*, but the child is otherwise perfectly well. He has practically no symptoms.

The second cases is that of a man aged forty years, who commenced with cystitis during an acute attack of measles at the age of 15 years, and has had cystitis ever since. At the present time he has quantities of *bacillus coli* in his urine, and, less fortunate than the child I have just mentioned, his bladder is contracted to a capacity of only three ounces, and cystoscopy shows a mild pyelitis on both sides.

These two cases show the obstinate persistence of chronic autogenous infections, exactly similar to the apparent incurability of similar chronic infections in adults.

Chronic Infections Associated with other Conditions. Inasmuch as other diseases of the urinary tract, such as stone, stricture and enlargement of the prostate, are less frequent in children than in adults, so too are chronic *bacillus coli infections* less common.

But in addition these infections show a marked difference in children to their behaviour in adults. In adults *bacillus coli* infection coincident with stone, stricture and enlargement of the prostate is exceedingly common. Moreover, it is in too many cases desperately intractable. It is well to be upon one's guard in these cases against giving too favorable a prognosis with regard to the complete cure of the patient. The stone can be cleanly and thoroughly removed, the stricture cut or dilated, and the prostate enucleated with complete removal of the symptoms referable to stone, stricture, or prostate, but a chronic infection present before the operation or in some cases induced by the operation, is only too often there to remain.

In the chronic autogenous infections of adults I am now accustomed to give a bad prognosis as regards cure and a moderately favorable one as regards relief of symptoms. In the chronic infections accompanying these other conditions in adults the prospect of cure is brighter, but in similar cases in children the prognosis is most definitely brighter still. The removal of stone from the bladder or kidney the subjects of *bacillu coli* infection have been followed in most instances in my own practice by the cure of the infection.

An excellent illustration of this type of case is that of a boy aged nine years recently under my care in the West London Hospital.

He was admitted on February 18th, 1910, suffering from pain in the hypogastrium, pyuria, and pain on micturition. For about four months he had been ailing, and had complained of pain in the stomach. For a week the mother had noticed that the urine was very thick. No blood had been seen. The temperature was 100 degrees, and the pulse 116. The abdomen was rigid, and tenderness was elicited by moderate pressure above the pubes and over both kidneys, which were both felt to be enlarged. The urine was found to be swarming with *bacillus coli.*

The patient's condition improved until March 2nd, when he had a rigor, and the temperature rose to 101 degrees F. Four days later some soft phosphate debris was passed, and a considerable increase in the pyuria was noted.

On March 11th I cystoscoped him, and found a considerable amount of soft phosphatic material in the bladder, a general cystitis, and a turbid efflux from both ureters, indicating double pyelitis. I crushed and removed the phosphatic calculi in the bladder. The general condition then much improved and the right kidney subsided, but the left remained large, and a radiogram showed irregular dense shadows. A little later I therefore explored the left kidney, and found it to be very large, practically converted into a multilocular cyst, the cysts being filled with purulent urine and phosphatic debris. I therefore removed the kidney and the greater part of the ureter.

Ten days after this operation the urine was free from pus and albumen, but a few colonies of *bacillus coli* were grown from it. Now, nine weeks after the operation, the urine is perfectly bright and clear, and recent cultures failed to show the presence of *bacillus coli.*

This is an excellent example of the way in which very unpromising cases of this infection will clear up in children once the exciting cause is removed.

I do not mean to suggest that similar cases do not occur in adults, but I do not experience the same success with them as with children.

Treatment.—1. Infections dependent upon or coexisting with other conditions cannot be cured without the removal of the exciting causes, such as stone, strictures, etc. When these exciting causes have been removed the treatment should be the same as that for the autogenous infections.

2. The treatment of autogenous infections may be divided into the treatment of the acute and the chronic forms.

From so small an experience as I can lay claim to, it would obviously be improper for me to dogmatize, but I have now worked out a course of treatment in adults which gives reasonably satisfactory results in them, and applied to the cases of the few children I have had under my care has answered equally well.

A, *Acute Infections.*—The main points I rely upon in the treatment of the acute cases are:

1. Absolute rest in bed.
2. The induction of free diuresis.
3. To render the urine alkaline.
4. The use of urinary demulcents and sedatives.
5. Abstention from instrumental interference.
6. Practically a milk diet.

The first essential is unquestionably complete rest in bed. I do not allow patients to get up at all until all acute symptoms have completely subsided. I have seen quite a number of cases of adults where, on the partial subsidence of symptoms, permission was given to sit up for a little, a relapse occurred.

A copious secretion of urine should be induced by the use of such waters as those of Contrexeville, Vichy, Wildungen, and the like, together with the use of spirit of nitrous ether, ammonium, ecetate and squills. The milk diet involving the ingestion of large amounts of fluid helps the diuresis. The urine should be rendered alkaline by the use of considerable doses of potassium bicarbonate of citrate.

To relieve the scalding sensation experienced during micturition I have found that plenty of barley water, taken plain or with milk, assists, and better still the use of decoction of *triticum repens*, a wineglassful every two hours being taken.

The best sedative drug seems to be oil of sandalwood. Many adults and most children find this exceedingly disagreeable and provocative of indigestion in the pure form, but the most delicate child can take it in the shape of sanmetto, a proprietary preparation, the composition of which is well known.

The well-known urinary antiseptics. such as urotropin, helmitol, cystamin, cystopurin, and the like, I have found practically valueless in pure *bacillus coli* infections, but on the other hand, the benzoates of sodium and ammonium prove of value when exhibited with alkalis. Liquor potassae must not be used with the benzoates.

I cannot lay too strong an emphasis upon the inadvisability of instrumental interference in these cases. Some years ago

I tried thorough irrigation of the bladder, but very soon found that the symptoms were aggravated rather than relieved, or at the best were only slightly relieved, without in any way shortening the duration of the attack. For some years now I have scrupulously abstained from local interference and find the results just as good, and in most cases better, without causing the distress to the patients which bladder washing entails in the presence of an acute cystitis.

Lastly, I am convinced that the diet should be practically a milk one, very cautiously and tentatively increased to fish, chicken, and lastly meat, as the symptoms improve. I have seen quite a number of cases where a most definite relapse occurred on a too early increase in the dietary. The temperature should be normal, pain a thing of the past, and the urine well on the way to a clearance before the admission of solids to the dietary.

I have tried vaccines in a considerable number of acute cases in adults. I have found them of no value, and I do not see that they are likely to be of any more value in the case of children.

B. *Chronic Autogenous Infections.*—Here, again, I can only speak from a large experience of adult cases; but probably what is sauce for the goose will prove to be equally sauce for the gosling. I am sorry to say that I cannot find in my case books of private patients nor in my hospital notes a single instance of real cure of this condition. No doubt many of these cases pass from one's observation, and some of these may be truly cured. Since I commenced the preparation of this paper I have communicated with a considerable number of patients whom I had not seen for periods varying from five years to two years, and in every instance an infection varying in severity still remained. Most cases of chronic infection can be much improved. I wish to make it quite clear that I am speaking now of autogenous cases and not of these where the removal of the cause in some instances removes the infection..

The lines upon which treatment should be pursued are, in my opinion, the following:

1. In mixed infections, particularly where the pyuria is considerable, thorough washing of the bladder with one of the mild antiseptics is useful, inasmuch as it relieves the frequent desire and the pain after micturition.

2. The drugs mentioned as useful in the acute cases are also useful in those more chronic forms—namely, benzoates,

sandalwood oil, hyoscyamus in large doses; and when the infections mixed with more pus-producing organisms, such as the staphylococci, *bacillus faecalis*, and the like, urotropine, helmitol, cystamin and similar drugs are of value.

3. In these cases I have found the use of a vaccine of the greatest possible benefit. I cannot say that I have known a case of complete cure; but undoubtedly a vaccine carefully administered is capable of ameliorating symptoms to a remarkable degree—to a degree unattainable by any other methods in my experience.

Not only have I found vaccines of value in relieving symptoms, but I also look upon them as prophylactic of those eruptions of activity to which these cases of chronic *bacillus coli* infections are so liable. I am speaking of course, of adult cases, but I think it is reasonable to suppose that children afflicted in the same manner will be influenced in a like degree.

I have now quite a large collection of adult cases where, but for the presence of the bacillus in the urine, and occasional increases of frequency of micturition and slight discomfort, the patients themselves would not be aware that any disease was present. These patients receive periodic doses of vaccine, and by its help I feel assured that they are kept in this state of comparative comfort, a condition previously unattainable by other methods.

To sum up the conclusions which I have at present reached, which I hope are no conclusions but only a stepping stone to better results in the future:

1. The acute autogenous infections with *bacillus coli* are less common in children than in adults. These acute infections show the same tendency to comparatively rapid and complete cure as is observed in older patients.
2. Chronic autogenous infections in children are also more rare than in adults. They also show the same intractability to treatment.
3. Chronic infections dependent upon, or occurring coincidently with other conditions of the genito-urinary tract, show a much greater tendency to complete cure than is the case in adults, after the cause (that is, stone or obstruction to micturition) has been removed.
4. Local treatment in autogenous infections is of small value.
5. Vaccines are of little value in acute cases, but are most valuable in chronic cases.

SOCIETY TRANSACTIONS

British Medical Association, London, July, 1910.

BACCILLURIA

Dr. E. Cautley (London) expressed himself as so closely in agreement with Dr. Box and Mr. Pardoe that he had little to contribute to the discussion. He regarded it as important to differentiate cases of bacilluria from those of secondary systemic infection. In his experience bacilluria was not very common, whereas symptoms arising therefrom were comparatively rare. In other words, bacilluria occurred without giving rise to cystitis or secondary infection of the urinary tract. Most cases occurred in girl babies, rarely in males. In older girls the urinary infection was generally a cystitis, and associated with vuvlitis or vulvo-vaginitis. Such patients got well rapidly, but were liable to relapse. In girl babies the infection was almost always a pyelonephritis. The symptoms were acute and the temperature chart might be identical with that of typhoid fever, a differential diagnosis being impossible without the assistance of a blood count and an examination of the urine. The prognosis of acute cases was good when they were treated by rest, milk diet and alkalies. Urotropin and its allies were of little value, but the benzoates apparently did good. Secondary attacks in such babies were rare. This was noticeable in comparison with the frequency of the relapses in *coli*-cystitis. He emphasized the importance of not overlooking other diseases because bacilluria was present. In one such case the patient was found later to have diphtheria of the stomach.

Dr. J. Graham Forbes (London) said that the bacteriology of urinary infections in cases occurring at the Hospital for sick children showed a marked prevalence of the *Bacillus coli* group of organisms. Out of a total of 88 cases of urinary infection examined in the last six years, *B. coli communis* was found to be the only infecting organism in 56; in 10 others it was combined with staphylococcus or streptococcus. In 12 cases staphylococcus only was obtained; in five cases *B. proteus vulgaris;* in three cases streptococcus; and in two cases Gaertner's *B. enteritidis.*

In the present discussion he proposed to include with the infections due to *B. coli communis*, which form 75 per cent. of the total above mentioned, the five cases due to *B. proteus vulgaris*, and the two due to Gaertner infection. The pathological conditions which the *B. coli* gave rise to were in the majority of cases cystitis; in a smaller number, which ran a severe and fatal course, there was also infection of the ureter, pelvis of the kidney and the renal tissue itself; and in two cases there was evidence of a general septicaemia. Out of seven cases which proved fatal and came to post mortem examination, two were urinary infections by *B. coli* complicating general tuberculosis, one showing advanced lardaceous disease; in one, death was due to an intercurrent pneumococcal menigitis, and in the urinary tract, the bladder alone showed chronic inflammatory change. In the four remaining cases the pathological conditions found did not present quite the same features, and might therefore be briefly detailed.

Case I. Girl, aged six. Urine during life contained much pus, and yielded typical *B. coli.* Kidneys: Both enlarged, right more than left; renal substance was pale and soft but showed no purulent foci. Pelvis much dilated, and contained purulent fluid. Both ureters were equally dilated along their whole length, and measured one-third of an inch in diameter; each showed kinking in two places—(1) two inches from the renal end, and (2) just after passing over the brim of the pelvis. The openings of the ureters into the bladder were of normal size, and showed no evidence of obstruction. The bladder contained a small quantity of purulent urine, and its wall was much hypertrophied, the mucosa thickened and congested. Liver enlarged, pale and fatty; other organs appeared normal.

Case II.—Boy, aged five and one-half months. Four days previous to admission circumcision had been performed, apparently to relieve phimosis; died the day after admission; body emaciated. Kidneys: Both swollen and nodular, showing patchy pallor on the surface. Ureters much dilated, and taking a corkscrew course to the bladder; equally distended throughout their length. Bladder much hypertrophied. Urine taken from the bladder post mortem yielded a deposit of pus and typical *B. coli* in culture.

In the first case the condition was possibly due to obstructive malformation of the ureters and secondary infection of the urinary tract. In the second case the condition was possibly the result of phimosis.

Case III.—Boy, aged four months, died two days after admission, previously having suffered from diarrhea and vomiting. Kidneys: Capsules stripped easily; a few pale circular areas seen on cortical surface. Pelves not dilated, but contained thick purulent fluid; the renal substance showed pale tracts running through it. Ureters not dilated, but both contained pus. Bladder not thickened, mucosa congested and swollen in upper part; orifices of ureters appeared normal. Stomach and intestines were normal. Cultures taken from the heart's blood, spleen and pelvis of the kidney yielded a typical *B. coli*.

Case IV.—Girl, aged seven months. During life there was vomiting and diarrhea; the urine contained pus and yielded a bacillus whose reactions were not typical of *B. coli*, but rather of Gaertner's *B. enteritidis* variety. Brain showed thrombosis of superior longitudinal sinus. Lungs: There was a small area of infarction in the left lower lobe. Kidneys: Left pelvis smaller than usual, ureter not dilated; renal substance contained a large purulent infarct and several smaller foci of pus. Right pelvis contained soft purulent fluid; there were numerous pale areas containing pus underlying the capsule. Right ureter larger than left, and congested. Bladder healthy. Cultures were taken from the heart's blood, and yielded a bacillus whose reactions resembled a variety of Gaertner's *B. enteritidis*.

The two cases just described were in all probability due primarily to a gastro-intestinal infection, with later general systemic infection including the kidneys, giving rise to pyelitis and descending infection of the urinary tract—in the one case due to *B. coli* and the other to *B. enteritidis*.

Two cases were submitted to operation, the urine having for some time contained pus, and an enlarged kidney having in each case been distinctly felt. In one, the organism present in the urine gave typical reactions of *B. coli*. Nephrectomy was performed. The excised kidney was much enlarged, and its substance studded with numerous large, firm collections of pus which yielded *B. coli* on cultivation. The bacillary infection had caused pyelitis and multiple renal abscesses. In the other case, in addition to pyuria, a purulent vaginal discharge developed; the bacteriological examination of both the urine and vaginal pus yielded a bacillus giving the typical reaction of Gaertner's *B. enteritidis*. The kidney was later opened and drained, and the pus which was evacuated also yielded the same organism.

General Bacteriological Investigations.—In the great majority of cases the bacillus isolated yielded the typical reactions of *B. coli communis* as follows:

1. The formation of indol in broth culture—identified by the intense redness produced by addition of paradimethylamido-benzaldehyde (one per cent. solution in absolute alcohol and hydrochloric acid) and saturated solution of potassium persulphate.
2. The coagulation and acidifying of litmus milk.
3. The acidifying of McConkey's fluid with gas formation.
4. The reduction of neutral red to yellow fluorescence.
5. The growth of red colonies on Conradi-Drigalski's neutral bile salt agar.
6. The formation of gas in glucose gelatine shake culture at 22 degrees C. without liquefaction of the gelatine.

Variations of these typical reactions were occasionally found to occur.

Indol formation, the acid coagulation of litmus milk, the reduction of neutral red broth, were obtained in every case of *B. coli* so tested. But in four cases no gas formation occurred in glucose gelatine; in three cases inoculation of McConkey's fluid yielded no acid fermentation nor gas formation. In two of these no gas formation occurred in either McConkey's fluid or in glucose gelatine; in two there was no gas formation in glucose gelatine, and in one no gas formation occurred in McConkey's fluid. In all other respects the organisms giving these variations behaved as typical *B. coli communis* and they are, therefore, justified in being included in the coli group. Repeated tests showed these variations to be constant.

The fermentation tests yielded acid with isodulcite, glucose, lactose, maltose and mannite: acid or no change with cane sugar, raffinose, glycerine and salicin. In four cases vaccines were prepared from the organisms isolated in each case, and yielded marked improvement in three cases. In the fourth case there was no apparent improvement, and subsequently a streptococcus was isolated in addition to *B. coli*, but the mixed vaccine produced little or no effect.

In one of two cases referred to above the organism was identified as belonging to the Gaertner or *B. enteritidis* group by means of the following reactions.

1. Litmus Milk. Early production of acid with alkaline surface ring, later becoming strongly alkaline, and finally limpid without coagulation.
2. Indol formation.
3. Gas formation in glucose gelatine without liquefaction.
4. Acid and gas formation in McConkey's fluid.
5. Fluorescence with neutral red.

In the other case the organism obtained from the urine during life and the heart's blood post mortem gave the typical reaction with litmus milk, but failed to form indol, produced no gas in glucose, gelatine or McConkey's fluid, and did not reduce neutral red.

It was possible, therefore, that this organism might have belonged to a variation of the *B. enteritidis*. The five cases placed in the proteus group were identified by the production of indol, the acid coagulation of milk, the reduction of neutral red, the formation of gas in glucose gelatine, and the liquefaction of gelatine. In one case a vaccine was prepared from the organism isolated, and yielded very beneficial results.

In conclusion, the speaker said that the cases thus analyzed showed that the *B. coli communis* was by far the commonest organism found in urinary infection, though variations in the strain isolated might occur, and mixed infection with *B. coli* and streptococcus and staphylococcus might exist. In rare cases *B. proteus vulgaris* or the *B. enteritidis* might be the infecting organism; though clinically the cases might at first appear the same, the further course was usually more severe than with *B. coli* infection. Treatment by means of vaccine prepared from stock vaccine might in some cases produce good results temporarily, but owing to the possibility of variation in the *coli* group a vaccine prepared from the patient's own organism was undoubtedly to be preferred.

Dr. W. M. Jeffreys (London) said that he proposed to give an analysis of the cases collected from the Hospital for Sick Children, Great Ormond Street, with a few conclusions. He had collected 37 cases in which the organism had been identified, and full notes made. Four of these were due to the *Bacillus proteus* and the rest to members of the *Bacillus coli* group. He included the proteus cases because they so closely resembled the *coli* cases clinically. In the present series there was no special age incidence, nor was the disease more prevalent at one season of the year than another. The sex incidence in the series was similar to that reported by others; there were 31 females and only six males. The youngest was four months, the oldest 11 years. Twenty-two cases were associated with gastro-intestinal trouble, as evidenced by diarrhea, vomiting, constipation, mucous colitis, or ulcers in the colon. One case occurred after an attack of appendicitis and recovered after removal of the appendix; 20 cases commenced with bladder symptoms, such as painful micturition, incontinence, or frequency; seven commenced with symptoms of renal infection, and ten with general symptoms not pointing to any system in particular. Of the 20 cases that commenced with bladder symptoms seven later showed signs of pyelitis, and of the seven that commenced with symptoms of pyelitis three later showed signs of cystitis. Of the pyelitis cases 11 began in or were confined to the right and three to the left kidney.

In ten cases the disease ran a severe course, and of these three died of the disease. The rest ran a mild course—that is to say, the symptoms soon disappeared, and there was never any cause for apprehension. Of the 27 cases that ran a mild course only eight had symptoms suggesting pyelitis; these symptoms were pain and slight tenderness in one or both loins of a temporary nature, the rest showed evidence of bladder affection only.

Of the whole series of 37 cases only 11 left the hospital cured—that is to say, without symptoms and with normal urine. Of the remaining 26, 20 left the hospital apparently in good health but with pus in the urine, and six died, three of the disease and three of some other illness of which the *coli* infection was a complication. In three cases the trouble dated from birth, and these three children were all over four years of age. Of the severe cases, No. 11 had nephrectomy performed and made a slow recovery, but the urine still contained pus on her discharge from the hospital. Case No. 19 had high fever with jaundice, which rapidly disappeared after an injection of vaccine. She later had a rigor with another rise of temperature; this was again overcome with an injection of vaccine, and she made rapid progress, but the urine still contained pus on her discharge from hospital. Case No. 27 became uraemic after a prolonged illness and died. There was double pyelitis, both ureters were dilated and tortuous and the bladder hypertrophied. Case No. 29 developed a pyonephrosis which was opened; she got well except for a fistula, and the urine still contains pus. Case No. 30 died the day after admission, and double pyelitis, distended ureters and hypertrophied bladder were found post mortem. Case No. 31 began with abdominal pain on the right side, vomiting and jaundice, the urine was normal on admission, but a few days later there was albumin, and after that pus appeared, next she had frequency and incontinuence of urine, and then pain in the other loin; she became uraemic, but made a good recovery under vaccine treatment. The urine still contained pus on her discharge from hospital, however. No. 34 had a nine days' history of diarrhea and vomiting, and died two days later, at necropsy there was pus in the pelvis and ureters, but no dilatation or tortuosity. In this case there were inflamed patches in the colon at the hepatic and splenic flexures. Case No. 36 gave a history of vomiting for a week, the feet were swollen, there was a double murmur at the apex and great tenderness in both loins, both kidneys could be felt and the urine contained a considerable quantity of blood, the temperature was high, but fell gradually under vaccine treatment.

The earliest case occurred in 1902. There was only one that year; in 1904 there was one; in 1906 there were two; in 1907 there was one; in 1908, five; in 1909, 15 and there had been ten this year. Hence the question arose Was the disease becoming more common? Or were the cases formerly overlooked? The speaker was inclined to think that they were mostly overlooked, for on examining the older case books of the hospital he found a number of cases of a similar nature, in which very little attention to the urine was noted and no bacteriological examination made; there were also a number of post mortem records showing changes similar to those found in the fatal cases of the present series. It was especially likely to be overlooked in small babies, because the symptoms did not point to the urinary tract, and it was only by searching for pus in the urine that they might be discovered. On the other hand, there was evidence suggesting that the disease was becoming more severe. Of the 10 severe cases of the present series, only one occurred out of 12 cases up to the end of 1908; two occurred out of 15 cases in 1909; and there had been seven out of ten this year.

As to the path of infection, the evidence was in favor of an ascending infection in the majority of instances. First, the sexual incidence was in favor of this, the short female urethra favoring a cystitis more than the long male urethra; next the fact that 20 commenced with bladder symptoms, and only seven with renal. Nevertheless, a certain number appeared to start with a pyelitis. No. 31 was a good instance. Here pain in one loin with jaundice was the first thing noticed, then pus appeared in the urine, then bladder symptoms appeared and, lastly, pain in the other loin. This looked as if the right kidney had become first infected and that the infection spread down the ureter to the bladder and up the other ureter. The cases varied very much in intensity; one case cleared up spontaneously after a three weeks' history, and one died at the end of ten days. The majority recovered from the acute symptoms and appeared to get quite well, but it seemed almost impossible to get rid of the pus from the urine. As regards treatment, the severe cases responded best to a vaccine; the mild ones appeared to lose their symptoms on any form of treatment, but pus remained in the urine often for a long time, in spite of all attempts to get rid of it.

Dr. J. McCaw (Belfast), speaking of the exhibition of alkalies to young children, said that he had given them with success per rectum where infants would not take or swallow drugs; by this method the drugs seemed to act as well as by the mouth. In *coli* infections a most important objective symptom, and generally an early one, was *a rigor with a high temperature.* The absence of urinary symptoms was significant in children. It was most frequently seen in females, and was generally an ascending infection. He had not had any satisfactory results from giving antiseptics, but he was satisfied that urotropine would clear and deodorize a cloudy and fetid urine.

Dr. Staveley Dick, (Manchester), said that in his experience the theory of ascending infection would not satisfactorily account for all cases, and especially for cases of pulmonary infection with a bacilluria, but without bladder symptoms. His experience was that *coli* infections were much commoner in adults. He thought that an autogenous vaccine was of great value in acute cases where for some reason alkalies could not be taken. With regard to the reason why alkalies did good in these infections, he thought the true explanation was to be found in the direction recently indicated by Dr. Thomas Houston, who had shown that ingestion of *B. coli* by leucocytes was much more active in an alkaline than in an acid medium.

Dr. J. H. Thursfield (London) remarked that the chronic cases were not, in his experience, of such gloomy prognosis as had been thought by previous speakers. It might be that this was due to a difference of material, his own material being chiefly of the out-patient class, while that of other speakers was chiefly among in-patients and of course the slighter cases of the disease, which formed by far the largest proportion, did not reach the wards. He suggested that in chronic cases following operation it was possible that adhesions between the intenstines and bladder might afford an explanation of the chronicity. Lastly, though bacilluria was not necessarily, as Dr. Cautley had said, an infection of the urinary tract, yet bacilluria, in view of what they knew of the sudden recurrences of the infection, must be looked upon as a dangerous condition.

Dr. C. R. Box, in reply, said he did not think that the members of the Section took so gloomy a view of the treatment of *B. coli* infections as Dr. Thursfield's remarks implied. His own impression of the discussion was that the failures in treatment referred to the chronic cases only, and fortunately these were much less common than the acute ones in which treatment was successful. It was interesting to speculate why vaccines failed in the chronic cases. His impression was that it was owing to some failure in reaction on the part of the patient, the very presence of which reaction was the cause of the easy recovery of acute cases under simple treatment without vaccines. The hypothesis of ascending infection had been accepted by most of the speakers, but of course no one would be so rash as to assert that the infection was an ascending one in every case. The occurrence of colon bacilluria during the course of such infective conditions as diphtheria, measles, and scarlet fever had been referred to. It was well recognized by those who had to deal with fever hospitals, and it was important to recognize it as a cause of unexplained fever and incontinence in fever patients.

Mr. J. Pardoe, replying to the questions of various speakers said that he was particularly struck by two points. The first was the extraordinary sex incidence in children, with its bearing upon the mode of infection. This was in striking contrast to his own experience of adults, where he saw many more males than females. In this connection he might mention three cases where the disease began as an acute urethritis due to a mixed infection of *bacillus coli* and staphylococcus, the rest of the genito-urinary tract being apparently uninfected. If the infection was commonly an ascending one, why, he asked, did they not get more cases commencing as a urethritis pure and simple? The second point was the apparent faith that some of the speakers felt in the use of vaccine in the acute cases. He would ask what evidence was there that the good results were due to the vaccine; for the whole course of this discussion had led him to conclude that the general experience showed a tendency to spontaneous cure in the acute cases.

New England Pediatric Society.

The twelfth meeting of the New England Pediatric Society was held in the Boston Medical Library, November 26th, 1910. The following officers were elected for the ensuing year: President, Dr. John Lovett Morse, Boston; Vice-President, Dr. Charles A. Pratt, New Bedford; Sec. and Treas., Dr. Fritz B. Talbot, Boston; Council, Drs. Arthur H. Wentworth, Boston, Henry I. Bowditch, Boston and Francis P. Denny, Brookline.

The following papers were read:

"Examination of Spinal Fluid in Various Meningeal Conditions in Children," William P. Lucas, M. D., Boston.

"The Youthful Psychopath," J. W. Courtney, M. D., Boston.

"Proctoscopy and Sigmoidoscopy in Infancy as applied to Infectious Diarrhea," (preliminary report), Henry I. Bowditch, M. D., Boston.

Dr. James R. Torbert presented a case of a fetal monstrosity.

Dr. W. P. Lucas read a paper entitled, "Examination of Spinal Fluids in Various Meningeal Conditions in Children."

He showed several charts which showed that the cell picture and differential count of cells could not be depended upon in differential diagnosis of the various meningeal conditions in infancy and childhood. He emphasized the fact that the causative organism must be found before one can give a definite diagnosis.

Dr. Talbot: Discussion of Dr. Lucas' paper.

Dr. Lucas' paper is a very valuable and important one. My experience with the differential cell count agrees with the results which he has just quoted, but I believe that he has passed over the chemical examination of the cerebrospinal fluid much too lightly and would give one the impression that he thought it of no value. I believe that the test for sugar is of no value but think that the nitric acid test for albumen is of great significance. In my experience all infections of the cerebro-spinal canal show an excess of albumen in the spinal fluid. In the acute stage of poliomyelitis I have found a slight excess of albumen which disappears with the fever. In the subsequent stages of acute poliomyelitis and in such cases as come under the head of meningismus there is no excess of albumen by the nitric acid test. In many cases other elements such as cholestrin crystals are overlooked because the fluid is not examined in the fresh state. I have found cholestrin crystals and other curious bodies, the significance of which I do not understand. It has been suggested that cholestrin crystals are due to the breaking down of the brain tissue. If so, it is a very important observation.

Dr. Coriat: Dr. Lucas' paper.

Regarding the chemical examination of the spinal fluid, I would like to state my experience in the matter. During the five years that I was connected with the Worcester Insane Hospital I had opportunity to do a great many examinations in acute and chronic insanities in adults. In nearly every one of these cases the results were checked up with the microscopical findings in the brain. I found as the result of my experience, that the chemical examination was of as great, if not greater, importance than the cytological examination. A great many of these patients were suffering from acute and chronic meningeal affections; principally syphilis and general paralysis. In all these cases cholin was found as a disintegration product of brain lecithin and when the cholin was quantitated it was found to be exactly parallel with the breaking down of the brain tissue. I also made many examinations of the fresh fluid but I never found cholestrin, but I found peculiar bodies which resembled cholestrin and what I thought to be lecithin bodies. The sugar is of no value chemically; the albumen I found of great value.

Dr. Lucas, in reply to Dr. Talbot's and Dr. Coriat's remarks.

I did not mean to give the impression that the finding of albumen is of no importance, for I think it is of great importance, as it appears in practically every case where there is a clot formation. It has a very definite connection with clot formation. The presence of albumen is also made use of in studying the cytology in a very much better way than is possible by the ordinary routine methods. Dr. Ayer has reported a comparison of a number of cases studied by this method of Alzheimer with the ordinary laboratory methods and finds that one gets a very much more typical cell picture after hardening the cells in alcohol.

I am glad to see that others have come to the same conclusions as I have on the Fehlings test for sugar in the spinal fluid, for I had given it up as being of no value, whereas some of the English authors consider it a very important test.

Dr. Dunn: Discussion of Dr. Lucas' paper.

I would like to ask in these cases of encephalitis, mentioned in one of the tables, whether they were autopsied, or what the proof was that they were encephalitis rather than some other condition, especially the ones that died and did not have autopsies. I mean to say, that if there is no method of distinguishing between tubercular meningitis and encephalitis through the fluid, how was the distinction made in these cases? I would add that I have just been going over almost a similar work as this, which comprises a series of 142 cases of various forms of meningitis, and about 83 cases which were clinically mistaken for some forms of cerebro-spinal meningitis proved to be some other disease, and the results, as far as the investigation of the fluids was concerned were just the same as those obtained by Dr. Lucas.

Dr. Lucas, in reply to Dr. Dunn's inquiry.

The question of encephalitis is, I think, the most interesting and difficult one and the one over which the most mistakes are made. The two cases which you ask about and which I reported as having died were both autopsied. All those cases that died and were not autopsied, I have left out of the count, for our laboratory findings leave the question as to whether a case is tubercular or not unsettled unless the organisms (tubercle bacilli) have been found. These two autopsies were both studied by Dr. Southard at the Harvard Medical School. Dr. Southard and I have also seen the living cases since their discharge from the hospital. In all we studied about twenty such cases and the record of the spinal fluid of these cases are recorded in the chart on encephalitis.

Dr. J. W. Courtney read a paper on the Youthful Psychopath in which he concluded that the morbid conditions under consideration are to the observant fully obvious at an early period of life and that by proper treatment, their course may in many cases be arrested and many a mental wreck thereby averted.

Dr. Coriat, opening discussion on Dr. Courtney's paper.

I was much interested in the points brought out in Dr. Courtney's paper and while in the majority I fully agree with him, yet there are certain points with which I must take issue. There is no doubt, of course, that in the evolution of the parroses of children more than in any other forms of disease which occur in children, physical or otherwise, we can apply the old familiar lines, "As the twig is bent, so is the tree inclined." It appears to me that in a great many cases of childhood hysteria paranoia and dementia praecox there is a fundamental defect, and in fact in one of the most recent theories of dementia praecox which has been brought forward. is based on this defect as the underlying cause. Many of the forms of psychoses can be traced back to early childhood. I regret that Dr. Courtney did not say more about the forms of juvenile crime in childhood. I have had the opportunity of seeing quite a number of these cases and it is surprising to see how many young boys and girls from seven to fifteen years of age who commit petty infractions of the law are either light forms of epilepsy, of paranoia or even hysteria. Concerning the sexual side of the matter I think the only way the problem can be finally determined and finally solved is to make a thorough analysis and investigation into the sexual life of children, as Freud has done who for instance devoted 110 pages to the sexual phobia of a boy of five. Concerning the matter of treatment I fully agree with Dr. Courtney that the most the treatment should be educational and didactic.

Dr. Fairbanks: Discussion of Dr. Courtney's paper.

I think there can be no doubt that the majority of these cases are congenitally defective. We have in most of the instances a decidedly neurotic family history, an indication of family instability, on which with the gradual increasing complexity of the child's life, abnormal psychoses develop.

In the relatively simple life of the normal child, with its simple experiences, its lack of worriment and responsibility, there are no causes for acquired psychical defects. Another protection is the ignorance of consequences of conditions and acts, which protects the child from the strain of anxiety and anticipatory fear. Another shield is the elasticity of the child-psyche, the ease with which emotional impressions in the normal child are recovered from.

But even in a normal child the pernicious teaching or example of the parents or environment, by reproducing before the child adult life with all its morbid fears, anxieties, griefs and complicated processes of thought and experience may bring prematurely to that child the intricate relations of the adult mind to its environment, at a time when the child mind is not prepared by development, and by inhibition and judgment based on experience, to orientate and adjust itself to its environment. In this way the foundation may be laid, even in the normal child mind for a disturbance of psychic equilibrium of more or less complexity. Most of our adult anxieties, doubts and fears are based on insistent recurrent thoughts of what may happen as a result of a given association of circumstances because our experience or the experience of others of whom we know or have heard suggests to us that this or that result may follow in our own case as a necessary corollary of such circumstances. We have here the insistent idea or recurrent worry element that may form for the adult the foundation stones for a more complex neurasthenic or psychasthenic state. But in the normal child, before puberty we rarely have such a condition developing purely as a result of the child's own experience. If it does so develop in a reasonably normal environment, I believe it is only because the child is abnormal from the start, that is, congenitally.

As an example of the effect of environment on a perfectly normal child with excellent family history, I may mention the latest instance that has come under my observation. This is in the youngest of three girls in what we may term an ideal home, in which for the most part the most solicitious and wise care has been devoted to the children. Both of the parents however, have been for years hypersensitive upon the subject of disease and bacteria. All of the dangers lurking about the human being to rob him of his health, have been freely discussed before the children throughout their developing years. The children have even been taught to avoid anyone suffering from a common cold, and when they themselves were the victims they have been made to feel that they were a source of danger to every inmate of the household. The only neurosis, if it may be so considered exhibited by the family is a long existent morbid fear of the father's that he may sometime choke to death. Repeatedly he has interrupted the meals by a pseudo-choking attack. This, and the reported instances of asphyxia the children have seen and heard for years. The youngest of the girls now twelve years old a ruddy muscular out door child was engaged in a game of checkers with her sister recently, when she suddenly clutched her throat and held her breath much to the horror of her parents. She was pale but not cyanotic and after what seemed many minutes to the anxious family, inspiration took place with a loud respiratory crow. This attack was several times repeated during the next week and was considered by the family physician to be glotted spasm of serious character. It was however, a purely functional condition of hysterical nature. Suggestion in the drowsy state, just preceding induced sleep employed once, has I believe been completely effective in preventing the further recurrence to date. The child should have been further treated however and will undoubtedly require it sooner or later.

Hysteria in childhood differs in some respects from that of adult life and in my experience especially in the absence of the so-called stigmata namely, limitation of the visual field areas of anaesthesia hemianaesthesia, hysterogenic zones along the spines and over the ovaries. They are certainly relatively rare; not absolutely so, however, and I have just reported a very pronounced case where they were marked in a child of eleven. He who refrains from making a diagnosis however because they are not present in a child will often fail to recognize true hysteria when it occurs in childhood.

Dr. Courtney: Closing discussion of his paper.

Dr. Fairbanks has spoken of the absence of stigmata in juvenile hysteria. This is one of the points upon which I laid special emphasis in my paper.

Dr. Coriat has introduced the Freud theory of the sexual genesis of hysteria. With regard to this theory, I will simply say that I strongly object to it because of the mental and moral muckraking it involves, and, furthermore, because it makes the anamenesis of a female hysteric read more like a scabrous anecdote from Brantome's *Vies des dames galantes* than like a serious scientific document. I make so bold as to predict that this esoteric doctrine of Freud will, within the next two years, have passed into a well deserved oblivion.

The points I particularly wish to emphasize are these: (1) that certain psychoses and psychoneuroses make their debut early in child life; (2) that if they are recognized and properly treated at this time, they may, so to speak, be nipped in the bud; and (3) that the opportunity for their early recognition is more often given to the pediatrist than to the alienist or the neurologist. Consequently it is pre-eminently the duty of the pediatrist to prevent the psychopathic child from becoming a nervous and mental wreck.

Dr. Henry I. Bowditch read a paper on Proctoscopy and Sigmoidoscopy in Infancy as applied to Infectious Diarrhea, (abstract) in which he described the technique of using Dr. Tuttle's six inch pneumatic proctoscope. He examined the rectum and lower large intestine of many cases of infectious and non-infectious diarrhea last summer on the Floating Hospital and found that cases of diarrhea which have a history of blood in the stools show signs of inflammation (red thickened mucous membrane, prominence of the follicles, ulceration of various types but no true membranous condition) throughout the sigmoid and rectum especially during the acute stage of the disease: (2) that these lesions seem to vary according to the virulence of the infection as to number and general appearance; (3) that these lesions gradually become healed, leaving no signs or evidence of scar tissue visible to local sigmoidal inspection in life; (4) that blood and normal intestinal mucous membrane may be present at least in the sigmoid and rectum in cases of fermental diarrhea.

Dr. Bowditch: Closing discussion of his paper.

The introduction of the instrument was at times somewhat difficult. A certain amount of firm pressure had to be used to overcome the sphincter but the child did not seem to mind it in the least. With the instrument in place (inserted its full length) the child was perfectly quiet, and happy. They strained a little of course, but we could readily follow the bowels from the rectum and in the majority of cases could see the dark pocket at the end of the descending colon. Further introduction was impossible. I feel certain that we investigated in all cases the sigmoid for the greater part of its extent as well as the rectum. The pneumatic apparatus led but to one complication which was at first distressing. When we distended the intestines the air seemed to get above into the colon causing the child considerable discomfort. I discovered however that as I withdrew the instrument by gradually letting the air out the child had as flat an abdomen as before. The amount of blood that came away from the examination was, in the severest cases, never more than half a teaspoonful, and the straining and prolapse of the rectum I have been told was no more than that which occurred every day in these patients.

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RETROSPECT OF CURRENT PEDIATRIC LITERATURE.

Infant Feeding in Health and Disease

Under the Charge of

MAURICE OLIVER MAGID, M. D.

Adjunct Attending Physician, Yorkville Hospital for Women and Children; Physician, Sydenham Hospital Dispensary, Children; Formerly Physician in Charge of Infant's Milk Depot of the New York Milk Committee.

In an expose on the problems of nutrition in early life, appearing in the *Archives of Pediatrics*, Dr. F. S. Meara claims that while there may be differences in the casein of the cow's and woman's milk, there is not sufficient proof, as yet, to warrant the belief that bad results in artificial digestion are due to the casein. It has been demonstrated that stomach contents show about the same amounts of peptones and albumoses after cow's milk as after woman's milk; also that the stools of various infants contained the same amount of nitrogen, no matter whether cow's milk (containing very much nitrogen) or woman's milk (containing very little nitrogen) was fed the infant.

The "casein curds," which are seen in the stools, are not due to the casein ingested but are really due to fats, fatty acids, bacteria and epithelium. The fact that there is no relation between the nitrogen content of the food and the nitrogen content of the stools argues against the curd being indigested casein. These curds appear also when infants are fed on large amounts of sugars, or on whey, the latter containing no casein and no fat. In this condition the fats and fatty acids are attributed to the sugars, and the nitrogen to the intestinal secretions.

Proteid, whether woman's or cow's, is now looked upon as the most innocent and easily handled of the food constituents. It has several functions in the human economy. It repairs waste, and makes good the loss resulting from the wear and tear on the tissues. In the infant and child this function is not so pronounced. The minimum proteid need in the infant cannot be accurately determined, but in some experiments it has been found to be 0.2 to 0.45 gms. of nitrogen during the first fourteen days of life. Nitrogen adds to the body substance. This role is of prime importance in children as it enables the body to grow. In a series of experiments on healthy children ranging in age from four days to five months, it was found that the amount of nitrogen ingested during that period was about the same at all ages, but that the nitrogen in the urine and stools increased with age, i. e. the amount of stored nitrogen diminished with advancing age. The nitrogen storage will be found to form a curve like that of the weight, growing flatter with advancing age. During illness, breast fed as well as artificially fed children have much less ability to store up nitrogen than when they are in health. During convalescence this function may be very great. The stored nitrogen is changed into body proteid as the occasion requires. The third function of proteid is to furnish heat and energy to the body. The heat value of proteid is the same as that of the carbohydrates. A gm. of either when completely combusted yields 4.1 calories. The body receives most of the heat and energy from the carbohydrates and the fats.

Mineral salts must have a very decided influence on nitrogen storage for there is a striking parallelism between nitrogen storage and ash storage, both in its totality and in that of certain individual salt constituents.

While fat has a high caloric value, 9.3 per gram., it does not spare the combustion of the proteid to any appreciable amount, but the influence of the carbohydrates in this direction is enormous. In considering the digestion of fats by breast fed and artificially fed infants, Freud emphasizes the fact that a breast fed child thrives on a greater percentage of fat than at any other period of life; that an artificially fed child rarely stands such amounts, and a sick child can be seriously damaged by the smallest quantity of fat. It has been pointed out by many observers that there exist differences in the fat of human and cow's milk. These differences are not only physicial but also stereochemical. The woman's milk contains a higher amount of oleic acid and a lesser amount of the volatile acids. Fat in woman's milk also has a lower melting point (38 or 39 degrees C), than that of cow's milk (40 or 41 degrees C), and a higher iodine combining power (30 per cent. to 50 per cent.)—than that of cow's milk (20 per cent. to 30 per cent.).

Fat has a tendency to delay gastric digestion. It is the last constituent of the food to leave the stomach. Tobler has been able to recover 29 gms. of fat from the stomach in one case, more than the total ingestion of fat for the preceding 24 hours. In healthy children 94 per cent. to 98 per cent. of the fat is absorbed either in a neutral state, or as fatty acids or soap. In the artificially fed the absorption is remarkably good in chronic diseases, but in the acute cases and especially in alimentary intoxications the absorption is more or less seriously interfered with. One phenomenon closely related to fat metabolism occuring in certain forms of disturbed alimentation is acidosis, the appearance in the circulation and in the urine of acetone, diacetic acid, and oxybutyric acid. This is due to an incomplete oxidation of the fats, in the presence of insufficient carbohydrate metabolism. Acidosis does not occur only in infants who are on an exclusive milk diet, but has been seen in several older children, who were otherwise on a rational diet, but had been taking a quart of milk daily all their lives.

Salts play a part in the vicious circle of events leading up to this acidosis. Woman's milk contains an average of 0.2 per cent. of salt and cow's milk contains 0.78 per cent. of salts; about 80 per cent. of the salts in the former are absorbed of which about 40 to 50 per cent. are retained, while of the salts of the cow's milk only 60 per cent. are absorbed and about 15 per cent. are retained. Sufficient and insufficient salt administration with the food affect the weight curve in such a way that it makes it clear that they stand in relation with each other.

It is important to estimate as closely as possible the fuel value of the daily dietary. This is determined by estimating the heat production of the various constituents. The unit of measure is the calory or the amount of heat necessary to raise one c. c. of water through one degree C. One gram of fat yields 9.3 calories; one gram of carbohydrates yields 4.1 calories; one gram of proteid yields 4.1 calories. The "energy quotient," established by Heubner, represents the number of calories per kilo of body weight per day, at six months, as 100. This figure arrived at from observations on thriving children, agree with the results obtained in the study of the quotient in breast fed children. The average number of calories demanded for the first quarter is estimated as 110, for the second quarter as 100, and for the third quarter as 90 calories per kilo of body weight per day. These figures gradually decrease, but they stand as high as 75 and 80 calories per kilo at the end of the second year.

It has been estimated that about seven per cent. of the caloric need of the body should be supplied by the proteids; for example: if we took the caloric needs of a child of three months weighing five kilos (11 lbs.) as 100 calories per kilo, the result would be 500 calories; seven per cent of these or 35 calories should be supplied by the proteids. Taking 4.1 calories per gram, as our divisor, we should have 8.5 grams of proteid as our necessary quantity.

To estimate the caloric value of a quart of milk mixture of a formula containing three per cent. fat, six per cent. carbohydrates, and one per cent. proteid, to be given to a child of two months weighing 10 lbs., determine approximately the amount of each ingredient in the mixture, then multiply the product by the caloric value of each ingredient, as in the following:

One quart equals 32 ounces, 32 x .03 equals 96 ounces, or approximately one ounce (31 grams) of fat.

The caloric value of fat is 9.3 per gram, therefore 31 grams will equal 31 x 9.3 or approximately 290 calories.

The carbohydrates and the proteids having the same caloric value, may be combined in making the estimation, hence .06 plus .01 equals .07 which when mulitplied by 32 ounces equals approximately 2.25 ounces or 70 grams of combined carbohydrates and proteids. Multiplying this product by the caloric value of one gram, 4.1 equals approximately 286 calories. By adding the results we get 576 calories which is just about what the child needs, taking the average of 110 calories per kilo or 50 calories per pound.

To observe the intervals of feeding is a matter of great importance as failure in artificial feeding is atributed to following the traditional intervals of feeding. While it may be a fact that the stomach of a child fed on human milk is empty at the end of about two hours, it is to be borne in mind that the stomachs of infants fed on cow's milk may require three hours or more before they empty themselves. Owing to the layer-like arrangement of the food and in view of the fact that digestion takes place at the periphery, the nucleus of the curd may have been in the stomach for hours, increasing the content of bacteria and fatty acids. Even intervals of three hours do not allow the stomach any period of rest. It has been shown that when digestion is completed there is an alkaline secretion poured into the stomach, a completion of its toilet, so to speak, and then a rest.

The time consumed for the complete digestion of the different food elements varies. Carbohydrates take the least time, the proteids twice as long, and the fats require a still longer period. It has been demonstrated that when the fats in a mixture are raised from three per cent. to six per cent. the time demanded to empty the stomach will be lengthened from 100 minutes to 210 minutes. This retarding action of the fats on the stomach is due to the fact that fat delays the secretion of gastric juice, thus depriving the stomach of the presence of the acid required in order to open the pylorus. Fats in the duodenum also operate to keep the pylorus closed.

There is quite some difference in the physiologic capacity of an infant's stomach when compared with its anatomic capacity, because of the separation during the meal of the solid from the fluid portion of the milk and the passage of the latter into the duodenum. This process of separation begins as soon as the food is taken into the stomach. The amounts recommended at a single meal according to the physiological capacity are as follows:

1st month	115 C. C., scant four ounces
2nd month	125 C. C., trifle more than four ounces.
3rd month	145 C. C., trifle less than five ounces.
4th month	145 C. C.
5th month	170 C. C., trifle less than six ounces.

These figures represent the physiologic capacity which is about 25 per cent. more than the anatomic capacity in the first and second months, from 20 per cent. to 25 per cent. more in the third month, from 15 per cent. to 20 per cent. more in the fourth month, and about 20 per cent. or more in the fifth month.

Czerny and Keller state that in the first weeks a breast fed infant will take in milk about one-fifth of its body weight; from the middle of the first quarter year to the middle of the second quarter year one-sixth to one seventh of its weight; at the end of the first half year one-eighth of its body weight. They fix upon five meals a day as the optimum for both breast fed and artificially fed children, feeding them at four hour intervals. They never give more than one quart of fluid in 24 hours, and add other food when the milk mixture is insufficient.

It is important to nurse the new-born for as long a time as possible before putting the infant on an artificial food, even if this period be as short as one week. It is thought by the best authorities that the success in feeding such infants, who have nursed for such a period at least, is due to the fact that the maternal milk has established a physiologic flora in the intestinal canal.

If digestive disturbances occur on a cow's milk in the first two weeks of artificial feeding, the problem of feeding will be a very difficult one or quite impossible and recourse to a wet nurse should be had at once. The majority of children can be successfully fed on diluents of whole milk without the aid of creams. The use of dilutions of whole milk in the Breslau clinic has been very successful in the artificial feeding of infants. The clinic begins with a dilution of one part milk to two parts of water adding four per cent. milk sugar and increasing the strength of the milk up to the whole milk at the end of the year. The amount of whole milk in the mixture at the end of six months does not represent more than one pint (one-half liter) and if the gain of weight does not obtain on this, starch foods are added. At the end of one year one liter is given daily in the food mixture. In addition cereals are given. This food is considered sufficient for a well developed child.

As a diluent to the milk for the first three months a decoction of whole or coarsely broken grains of barley, oats or other cereal is used. This decoction "schleim" is made by adding water to the cereal grain and slowly cooking, allowing the grain to settle and pouring off the supernatant fluid. These diluents are made thicker in the second three months. At six months starch is added in the shape of flour. Meat broths are begun and cereals are added to this, and the whole constitutes a feeding. The milk mixture is not strengthened as long as the child is gaining in weight. The age of the child is not a factor when considering the increase in strength of milk mixture. More urgent indications are scanty urine, stationary weight when the digestion is good, small brownish stools, loss of tone in the tissues.

The Breslau clinic insists on careful observation of the stools, which are, on suitable amounts of milk, yellow and soft, and which as soon as the food is pushed in excess become lighter yellow, then gray, then white and may be easily whipped from the napkin leaving scarcely a stain.

When the infant is on a diet suitable to its age and no gain is evident, sometimes a change from mulk sugar to malt sugar will effect it. Milk sugar does not have the same influence on weight as the others.

Dr. Meara in conclusion approves the recommendation of Czerny and Keller and states that when the mixtures above mentioned are found to be insufficient, adding cream to them will help matters as it seems to be a fact that fat is better borne in earlier months than in the latter months. Fats are also better borne in the presence of low sugars. One ounce of gravity cream (16 per cent.) to a pint of the mixture adds one per cent. to the fat. The entire amount or any portion of it may be added to the mixture.

Diseases of the Skin and Uro-Genital System.

Under the Charge of

EBERHARD WILLIAM DITTRICH, M. D.

Instructor in the Diseases of the Skin, New York Post-Graduate Medical School and Hospital; Dermatologist German Odd Fellow's Home and Orphan Asylum; Physician Northwestern Dispensary-Dermatology.

Gonococcus Urethritis in Male Children.—Dr. A. Leo Wolbarst, (*N. Y. Med. Rec.*, Oct. 29, 1910). A careful study of 37 cases, the age of which ranges between 18 months and 14 years leads the author to the following conclusions:

1. Gonococcus infection in male children is not a rare condition, though it is far less common than in female children.
2. Infection is usually the result of precocious sexual activity, or accidental infection in the home; sexual perverts undoubtedly infect a goodly number of children.

3. In hospitals a fairly large number of infections take place, presumably through infected catheters, etc.

4. These young patients are liable to all of the extensions and complications, that occur in the adult.

5. It is possible, that many cases of sterility, sexual neurasthenia and urethral stricture are due to gonococcus infection in childhood.

6. The treatment is practically the same as in the adults.

Vulvitis, Vaginitis and Vulvo-Vaginitis of Children.—Frederic Hurst Meyer, (*The Therapeutic Gazette*). Inflammations of the vulva and vagina is almost invariably due to bacterial origin. Diminished resistance and infection in various ways amongst which the gonococcus plays the most important part are the etiological factors given by the author.

After describing exhaustively the signs and symptoms of vulvitis, vaginitis and vulvo-vaginitis in children, very good suggestions as to treatment are given for each condition.

The silver salts, inorganic and organic, are the most efficient remedial agents, while bichloride solutions and hot water also seem to be of great benefit.

Besides insisting on careful examination and treatment of Skene's ducts and the glands of Bartholin, his warning not to use rectal suppositories in acute infections of the vulva and vagina seems to me to be of great value on account of the possibility of carrying the infection into the rectum or bladder.

The use of parajodanisols (isoform) as recommended by Ash has given good results and the local treatment with yeast and grapesugar thus inducing fermentation is advocated by Kelly.

The milder cases of vaginitis need only douches once or twice daily.

Vulvo-vaginitis in children is treated with hot boric acid douches in the acute stages and when acute symptoms have subsided, argyrol and later on nitrate of silver ten per cent. are resorted to.

He also found intragluteal injections of vaccine to be of benefit. The dosage should be begun with 50,000,000 and be increased 10,000,000 each time until 100,000,000 are given. At least five or six treatments should be administered. Weekly bacterioscopic examinations should be made and the last ones should be negative before the patient is declared cured.

Neurodermitis with Psoriasis.—Dr. Dujardin, (*Journal Medical de Bruxelles*). The author describes some cases of neurodermitis with psoriasis.

This form of neurodermitis in contradistinction to the one described by Brocq showed the following conditions: (1) peripilar arrangement of the efflorescenses with no tendency to become confluent. (2) different places of predilection. External surface of legs over malleoli, elbows, and the external parts of the body in general. (3) a more psoriasiform type.

He also cites a fourth case in a carpenter 50 years of age, affected with neurodermitis above the malleoli and on the elbows. Of three of this patient's children two developed psoriasis, when they attained the age of three years. A fifth case shows the direct transition of a neurodermitis into a typical psoriasis.

The author concludes that this form of neurodermitis may appear as a forerunner of psoriasis. He even would assert that a neurodermitis of the parents may have a direct relation to a true psoriasis in the offspring.

A Contribution to Ichthyosis Congenita.—Dr. W. Glaser, (*A Thesis. Strassburg*, 1910). A close description of a case of keratosis diffusa universalis (Kyber) in an infant 36 hours old, is the subject of this paper.

Histologically a thickening of the corneous layer of the epithelium was found, while the rete malpighi was only slightly increased in thickness and showed its typical strata. The stratum papillare was hyperplastic all over, especially in the region of the scalp. Wolff in presenting a similar case in the physicians' association of lower Alsatia, mentioned consanguinuity as the only etiological factor known up to now in the production of keratosis diffusa. This factor apparently was also present in this case. There was another healthy child besides this ichthyotic one in the family. There was no history of other skin affections in his family.

A Case of Bromoderma Tuberosum Following the Use of Bromural—Dr. Segre Giorgic Giorn, (*ital delle mal-ven e della pelle*, 1910, Fasc. 2). A child less than two months old was given grammes 16.2 of Bromural within 27 days for pertussis.

Hard, somewhat elevated conical dark red infiltrations with yellowish vesicles in their centre could be seen on the head and the cheeks. Some of these papulo-pustules became confluent and disappeared after awhile, leaving only infiltrated spots. When the administration of the bromnural was discontinued, the foci became flattened changing into pink spots after 43 days. No bromine could be demonstrated in the urine.

Bullous Form of an Erythema Muliforme with Lung and Heart Complications.—Dr. Teissner and Schaeffer, (*Bulletin Mem. Soc. Med. des hop.*, 1910, May 20). An infectious condition in a girl is characterized by a general erythema of the (polymorphe) type with initial bullous and consecutive maculo-papular lesions. This was followed by a pleuro-pulmonary congestion and a mitral endocarditis. As the latter complication is rare in an erythema multiforme, the author thinks the case of enough importance, to be reported.

A Case of Larva Migrans.—Dr. Marcus Haase, (*The Journal of Cutaneous Diseases Including Syphilis*, August, 1910). L. L. an anaemic female white child showed the following interesting condition:

On June 12, 1909, a pinheaded sized papule appeared immediately above and over the metararsophalangeal junction of the second and third toes of the left foot. On June 15 a similar lesion was observed on the right foot over the second phalanx of the large toe. At this time the lesion of the left foot had extended an inch and one-half upward and backward. In about three weeks it extended upward and backward in the middle line in a serpiginous manner until it reached the tarso-metatarsal junction. Remaining quiet for about ten days it became active again, turned upon itself and extended downward and outward in an irregular course to the fifth metatarsophalangeal articulation and then progressed outward from this point and extended to the plantar surface of the foot until it reached the inner surface about two inches posterior to the tubercle on the first metatarsal bone, then taking an upward direction it again reached the dorsum of the foot. From here it continued forward and inward, then upward and backward finally outward, forming a complete ring in its course. The larva on the right foot behaved in a like manner. Neither larva was ever active during the child's waking hours, its progress only being noted after a night's rest.

Heroic treatment was opposed by the parents of the child and the attending pediatrist. A two per cent. carbolized Lassar's paste allayed the itching but did not cure the condition.

This case occurred in Columbia, Miss., about one hundred and fifty miles north of the Gulf coast.

Diseases of the Alimentary System.

Under the Charge of

JAMES WARREN VAN DERSLICE, M. D.

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Recent Reactionary Teachings Concerning Summer Diarrhea.—(*Montreal Medical Journal*), Ortenberg states that the results of the laboratory work of the German investigators has entirely revolutionized the system of infantile dietetics generally taught. He quotes the symptom complex given by Finkelstein, disturbance of consciousness, characteristic alteration of the breathing, alimentary glycosuria, fever, collapse, diarrhea, albuminuria and casts, sudden loss of weight, leucocytosis as the clinical picture of intoxication and rather broadly includes the summer diarrhea. He emphasizes the character of the breathing and the gmycosuria as pathognomonic. He states that this glycosuria is not a symptom of diabetes, as in the latter disorder the sugar is in the form of glucose while in the intoxication it is lactose or galactose and says that where there is only lactose excreted the prognosis is good, while if three be glucose this shows a disturbance of metabolism with a more serious prognosis.

He believes that the sugar is the mischief maker and calls these cases of sugar fever and states that the clinical picture of cholera infantum may be brought about by overfeeding of the sugars.

The treatment recommended is that of the stereotyped formula with the use of buttermilk and proteids as against the sugars and fats.

A Rapid Presumptive Test for Diarrhea Caused by the Gas Bacillus.—(*Boston Med. and Surg. Jour.*, Oct. 10, 1910). Kendall and Smith state that in order to throw light upon the subject of the distribution of the gas bacillus in the stools of the children suffering with diarrheal disorders they have utilized the material at the Boston Floating Hospital. The method used consists essentially of inoculating tubes of whole milk with a small portion of the suspected stool thoroughly emulsified in it, and immersed in a water bath to above the level of the top of the milk and heated to 80 degrees C. for twenty minutes, incubating at body heat for eighteen to twenty four hours. As an alternative procedure, the infected milk tube may be gradually brought to the boiling point of water in a water bath, kept there for three minutes, then incubated as above. By so doing, all bacteria not in the spore state are killed, and the development of the spores into vegetative cells is unrestricted by non-spore forming organisms. Those cultures containing the gas bacilli present at the end of the period of incubation three prominent features: The casein is largely dissolved; the residual casein is slightly pink in color, and filled with holes, the result of the stormy fermentation; the culture smells strongly of rancid butter, due to the formation by the gas bacillus of butyric acid. Gram stained preparations made from such growths show rather thick, short bacilli with slightly rounded ends. They state that the gas bacillus is found in the stools of some older bottle fed children which are in apparent perfect health.

They believe that the gas bacillus is the etiological factor in a small group of acute diarrhea of infants; for these cases they recommend after the first twenty-four hours treatment the use of buttermilk.

Idiopathic Acidosis in Children.—(*Brit. Med. Jour.*, Oct., 1910). Sharp uses this term to describe such cases of acidosis as apparently have no previous history of a condition as would cause this symptom complex. He uses the term traumatic acidosis in all cases in which starvation, fever, exclusive meat diet, are eitological factors.

The symptom complex includes sweet odor of the breath, patient drowsy or semi-comatose, rousing up as the attacks of vomiting come on. Everything is rejected; the vomitous is usually of small amounts of clear fluid. Headache is often complained of, as is thirst. The appetite is entirely lost. The respirations are frequent. The skin hot and dry. Cheeks are flushed and the temperature range is from 99 degrees at the onset to 103 degrees at a later stage. Bowels usually constipated. Urine scanty, but always contains acetone and frequently diacetic acid. but he states that he has never found sugar. In mild cases the urgent symptoms pass off in twenty-four to forty-eight hours. In the fatal cases the coma increases, the sweet odor of the breath may disappear, the temperature may reach 103 or higher, clonic spasms of muscle or convulsions frequently follow. In all cases it is important to attend to the abdominal symptoms. There is no violent pain, no peristalsis, no swelling. All that can be elicited is a tenderness high up in the abdomen.

Treatment.—Mild cases get well with simple treatment; he recommends alkaline diuretics and laxatives and a soda water reinforced with bicarbonate of soda as a beverage. If the vomiting is so insistent as to interfere with rest he uses small doses of opium.

The Prevention of Constipation in Women and Children.—Sir John Byers, in (*The London Practitioner* for May, 1910), says a good nurse trains an infant to empty its bowels at certain definite times and this habit should be insisted upon as the child grows up. Mothers should educate children to go at a certain time each day—preferably after breakfast. No hurry to get away after breakfast to school should be allowed to interfere with this daily visit. He advocates the method recommended by Howard Kelly of either lowering the seats of the closet or the use of a foot stool to more nearly imitate that posture used in the savage state of squatting. The breast fed child who suffers from constipation should have fruit and vegetables added to the diet of the mother. This combined with regularity of in feeding will usually overcome the condition. He emphasizes the need of scrupulous cleanliness in the technique of bottle feeding as an aid in overcoming the constipation. In the artificially fed he advocates the increase in the proportion of barley water as the addition of sugar or extract of malt. In children over six months of age he uses a well cooked oat meal gruel. At other times he uses fresh grape or orange juice. He thinks the infant should have daily exercise with all the clothing removed at least once a day. Massage of the abdomen, rubbing round and round in the direction of the course of the colon is strongly recommended.

Constipation in Childhood.—(*Practitioner*, May, 1910). Poynton believes there are few conditions that need a more comprehensive survey of the attendant circumstances than does constipation. He says that an infant may be constipated because there is a beginning milk dyspepsia and within a week this may be followed by intractable diarrhea. He quotes Still in showing that the length of the large intestine increases very rapidly during the first year of life and at that period actually outstrips the entire length of the body, showing that in early life the bowel is more folded and looped than in the adult; this being particularly true of the transverse colon and the sigmoid flexure. He states that constipation in the infant may be due to deficiency in the sugar or fat in the diet or to improper feeding. In other cases there may be deficiency in the biluary matter and probably also of the pancreatic secretions. Rachitis with the muscular weakness and over distension of the bowel by flatus may materially increase any tendency toward constipation. Chilling of the extremities he points out as another cause and he believes that there may be an hereditary tendency. He especially emphazsies the experience of having those children who have suffered from subacute inflammations of the intestinal tract developing obstinate constipation. Neglect of regular habits due to careless nurses or to the children themselves from inattention or false modesty or lack of opportunity; a too monotonous diet without fruit or vegetables and deficient exercises are also mentioned as causes. He states that the symptomatology falls into two main groups—those that result from stagnation of the bowel contents which are obstructive in character and those that result from the absorption into the system of noxious material. He follows Dr. Cheadle's grouping in the severity of the cases, recognizing four groups: first, those in which the health is little affected; second, those with slight disturbance of health with furred tongue, offensive breath, night terrors, a sallow hue and abdominal distention. Third or periodic group, there are during the attacks fever, headache, drowsiness, offensive breath and vomiting. In the fourth there are severe vomiting, nervous symptoms of much severity, and great emaciation.

He points out the resemblance which may occur between constipation and the cases of tubercular meningitis with stealthy onset and says the only safeguards are caution and a careful examination of the patient. The occurrence of the frequent occurrence of constipation during the early weeks of typhoid is mentioned. He states that chronic appendicitis may be missed by making a diagnosis of the more prominent symptoms but adds that it is far more frequent for the mistake of scybala in the bowel for a more serious condition. He confesses that while the characteristic nodular yielding feel is almost always present errors were easily made, and makes a dogmatic rule that in all obscure abdominal tumors to withhold the diagnosis until the bowel has been thoroughly opened. In the treatment he believes that a great deal of the widespread dislike to the regular use of aperients is due to statements in the quasimedical books that have been spread broadcast and he is convinced that the continual and careful use of aperients in cases of constipation is far better for the health of the child than a persistence of the condition. He lays down a golden rule of treatment—that powerful drugs are always to be avoided if possible in dealing with the young. He advocates the use of malted foods and the addition of extract of malt to the milk. In older children the lack of water or the use of hard water he believes to be a cause that should attract attention. He says that the treatment of this condition by diet though sometimes helpful is often disappointing and may even be harmful and he points out the great harm which may accrue to the giving of foods which leave a large residue when the constipation is stubborn. He says that fresh fruit in the country may be a valuable aid but is doubtful as it is often disappointing and unsatisfactory. When the constipation is yielding to treatment then he advocates the use of the prune juice, baked apple, oatmeal treacle, etc.

He considers the use of enemata and suppositories as entirely palliative. Of drugs he recommends manna dissolved in hot water and strained through muslin. The salines he considers the most valuable and most trustworthy. He recommends castor oil in the irregularity of action of the bowels giving it in small doses of five minims two or three times a day. He considers phenolphthalein an efficacious and convenient drug. He emphasizes the use of nux vomica and belladonna as being drugs of great service.

Constipation in Infants.—(*Practitioner*, May, 1910), Eric Pritchard says the volitional element is introduced in the later years and that in the child this element is lacking. Hence constipation from want of voluntary effort may occur. He points out that meconium is admirably designed to lubricate the colon and to offer a convenient medium of resistance to the peristaltic movements and says that it is impossible to exaggerate the importance of these first efforts. The reactions of the nerve centers on these first experiences soon form a habit when a series of actions are compelled to follow one another through the continued operation of a series of stimuli. Applying these premises to the intestinal peristalsis it is seen that if the mild and gentle stimulus of the meconium be replaced by a purgative dose of castor oil all subsequent reactions will be materially modified. He says the first ten days of life are extremely hazardous for the infant but especially so in respect to the intestinal functions. During this period there are many temptations to give aperient or purgative drugs, even when the meconium has not been artificially removed.

He says that constipation from over-feeding is very common among the better classes; in this variety the motions are usually copius, light colored, greasy and lumpy.

The measures for the prevention of constipation he summarizes, (1) never employ aperients, purgatives, enemata or suppositories especially during the first weeks of life. (2) In breast feeding make certain that there is neither under nor over feeding. (3) in breast feeding correct quantitative and qualitative defects by supplementary feeding. (4) induce regularity of habit by systematic training. He says that the commonest forms of constipation are due to dilatation and inertia of the bowel and interference with the nervous mechanism by over stimulation from acute attacks of diarrhea or abuse of purgative medicines.

He advocates the addition of petroleum to the diet as this never gives rise to nutritional or digestive disturbances. He uses an emulsion made with Irish moss as the emulifying agent.

He summarizes the treatment as follows:

1. In all cases the exciting cause such as deficiency or excess of food, or qualitative faults must be treated by appropriate means.

2. The motions may be softened by (1) free doses of petroleum emulsion and (2) in aggravated cases by small doses of drugs which promote intestinal secretions and the outflow of bile.

2. Inertia of the bowel may be treated by massage, massage and electricity or cascara and nux vomica.

3. In the cases complicated by a chronic colitis a preliminary course of irrigation may be employed.

4. In cases where the stools are light colored and offensive liquor pancreaticus may be given added to the petroleum.

5. In all cases regularity of habit must be enforced by careful and systematic training.

Agar-Agar Treatment of Chronic Constipation.—(*Practitioner*, May, 1910). Gompertz says agar-agar comes in long strips which may be ground into small pieces resembling a course cereal and should be given in fifteen gram doses, the amount to be increased or decreased to suit the individual and is usually eaten with the addition of cream and salt or sugar to make it palatable as any uncooked breakfast food. He states that of thirty patients in all but two cases regular bowel movements had commenced after it had been from one to three days.

Infectious Diseases

Under the Charge of

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Diphtheria in Children.—In an article based on the treatment of eight hundred cases of diphtheria, Dr. E. M. Still, (*The American Journal of Obstetrics and Diseases of Women and Children*, Nov., 1910), gives valuable information obtained from his eight years' experience. The cases reported were all verified by bacteriological culture growth, and the disease was most prevalent, in his series, during February, March, April and June. The largest number of cases occurred in March, the fewest in January.

Dr. Still assigns as the cause of the greater frequency of the disease in March the prevalence of catarrhal affections at that time and the lowered vitality at that season.

Of 757 cases under ten years of age there were 521 pharyngeal, 166 nasal and 70 laryngeal. One case of diphtheria of the eye lid and one case of aural diphtheria. Both nasal and laryngeal diphtheria occurred in the younger children, usually under three years of age. Dr. Still points out the interesting fact that out of 76 cases of clinical tonsilitis the cultures showed 67 to be cases with germs other than diphtheria bacilli, and nine showed Klebs-Loeffler bacilli. Dr. Still says that he has not infrequently gotten reports from bacteriologists of true diphtheria from cultures taken from an apparently normal throat and vice versa a negative report from a true diphtheria.

One negative culture should never be relied on if there is membrane on the throat. It is quite common to obtain a negative culture when there is an extensive membrane and a positive culture from the same throat a few days later.

Of 155 cases of clinical diphtheria there were 95 positive Klebs-Loeffler bacilli reports.

Cultures were taken from 127 cases of simple sore throat without membrane, of these 59 cases showed positively the diphtheria bacillus, or forty-four and three-quarters per cent. were classed as true diphtheria. In these cases antitoxine does not hasten the disappearance of the germ, but they are easily killed by local antiseptics.

Dr. Still says that about one per cent. of all children are diphtheria bacilli carriers, most of them being of a non-virulent type of bacilli, the mere presence of the bacilli not being sufficient for the development of the disease.

There are times, as pointed out by Parke, when these apparently harmless carriers can communicate the disease in a virulent form—the question of quarantine for such cases should not be neglected.

The diphtheria bacillus remains in the throat much longer than is generally supposed, the majority of cases are not clear under 30 days—while six weeks of treatment will in many cases find an apparently well child with diphtheria bacilli still present in the throat. Contrary to the general opinion, Trump of Munich says that one attack confers immunity in a large proportion of cases for the rest of the individual's life. In a recent epidemic at the Connecticut Hospital for the Insane the source of the disease was conclusively proven by cultutes taken from pets such as cats, dogs and chickens by Jessie Weston Fisher, M. D.

Dr. Fisher found 2.08 per cent of the apparently healthy individuals bacillus carriers in this epidemic, and after the epidemic was over one per cent. were found to be bacillus carriers. The mortality reported by Dr. Still is of unusual interest. In his series of 800 cases the mortality was less than one per cent. There were five laryngeal stenosis cases. two being moribund when seen and died of suffocation. One case of pharyngeal diphtheria developed pneumonia and died.

Post Scarlatinal Anuria for Five Days in a Boy of Three and a Half Years: Recovery.—Anuria for a period of five days is so rare that a report of such a case followed by recovery deserves the attention given it by Dr. W. P. Northrup in the (*Medical Record* of October 22nd, 1910). There are a few cases on record, one case of eight and one case of 25 days anuria, after scarlet fever, with recovery. In the eight day case two warm tub baths were administered daily.

Dr. Northrup says that the child, a boy became very adematous, water logged. He flattened out on the bed unmovable, eyes almost closed. No symptoms of uremia; no nervous symptoms; no delirium; pulse tension not increased; tranquil, not somnolent; slept naturally; temperature not above 100 F. Among the questions pointed out for discussion by Dr. Northrup are the following:

1. Was there purely a toxic inhilation of the kidney function?
2. Was there a possible swelling of the kidney within its capsule, prohibiting function, and was this in any way analagous to the urticarial swelling of the skin? angiomatous.
3. Would anyone nowadays, in a similar case, suggest splitting the capsule surgically? In the present case our patient recovered, but one again wait five days?

Diagnosis of Typhoid Fever in Young Children.—Dr. George N. Acker of Washington, D. C., in an article published in the American Journal of Obstetrics and Diseases of Women and Children, points out the difficulty in diagnosing typhoid fever in young children. Dr. Acker finds that the Widal reaction is positive in cases which have been proved by autopsy to be other than typhoid fever. One case of poliomyelitis gave a positive Widal reaction. One case of tuberculosis gave a positive Widal reaction. In many cases the true causes of typhoid fever gave a positive reaction only late in the disease. The culture of bacilli from the blood proved most certain and satisfactory. The eruption is less constant, less abundant and less characteristic than in adults. Not so much value is given to the Ehrlich Diazo reaction which is found in tuberculosis, septicemia, measles, pneumonia and probably many acute febrile diseases. The white blood count is an important aid in the diagnosis of typhoid fever.

Practical Points in the Management of Poliomyelitis and Its Sequelae.—In the Medical Record of October 15, 1910, Dr. Henry L. Taylor discusses poliomyelitis from the view of the orthopedic surgeon. Dr. Taylor agrees with Dr. Bernard Sachs who says, "I consider that time given to massage and electricity in these cases is time wasted. I cannot see that such methods do any definite good, and a great deal more benefit could be obtained by early institution of orthopedic measures." Dr. Taylor says that this has been the practically unanimous opinion of orthopedic surgeons for a generation.

Dr. Taylor believes that the most important indication in the first four to six weeks of the disease is rest in bed, in order to avoid irritating the site of the lesion and that the antitoxic forces of the body may have an opportunity to limit or repel the infection. He says that there is nothing that will cause more harm to a weak or palsied muscle than continuous elongation or stretching. Dr. Taylor believes that more can be learned from a systematic testing of the voluntary power of the various muscle groups than from an electrical examination. Various movements are executed for the test.

A Case of Typhoid Meningitis.—Dr. Benjamin Schwarts reports a case of typhoid meningitis in a male infant aged eight years, (*Medical Record*, Oct. 29, 1910). The case is authentic as the presence of a large number of cellular elements and the typhoid bacilli were formed in the cerebro-spinal fluid. The typical symptoms of meningitis were present. The Widal reaction was negative. Diarrhea was continuous. The patient died.

Diseases of the Nervous System in Children.

Under the Charge of

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The Wasserman Test in the Study of the Etiology of Mental Deficiency.—The role of syphilis in the causation of defective brain development in the child has always been an interesting problem. It has been repeatedly asserted and more strenously denied.

This divergent opinion has had its basis mainly in the well known difficulty of ascertaining from the parents an accurate history of their past, but a very large share of the blame rests upon the opponents of the specific causation, of at least a certain percentage of instances, because of an obstinate refusal or neglect on their part, to give proper attention and importance to suggestive and easily ascertained facts in the family history, and to suggestive stigmata, not in the patient alone, but in other members of the family. Such facts as repeated unexplained miscarriages, still births or excessive early infant mortality; the occurrence in the parents of obstinate ulceration of skin or mucous membranes, caries of bone, libial nodes, etc., are of great suggestive value; or the occurrence in the other children of keratitis, choroiditis, scars about the angles of the mouth, deformities of teeth and nose, unexplained impairment of hearing, etc., should be given a place of the highest importance in the determination of the etiology of any case of unexplained infantile mental defect.

Interest in the study of the etiology of these cases has been greatly enhanced, however, by the employment of a test that renders us to a considerable extent independent of the facts upon which we have hitherto been dependent for the positive diagnosis of a specific causation of these cases. By means of the Wasserman reaction we should be able, apparently, to determine in every instance whether or not the specific element is probable in any given instance of relative or absolute inbecility in childhood.

Since the discovery of the Wasserman test this problem has been attempted by a number of investigators. Bruck (1), Mott (2), Lippman (3), Kellner, Clemenz, Bruckner and Rautenberg (4), Raviart, Brenton, Petit, Gayet, and Cannac (5), in 1909; and this year Dean (6), at Wasserman's suggestion, investigated the matter in the asylum at Potsdam, To date about one thousand cases have been subjected to the test with percentages of positive results so variable as to make any attempt to secure an average useless.

Thus for instance, the percentages of the different investigators vary from 30.9 per cent. to nine per cent. It is quite evident that this wide variation in results depends either on the interpretation of what constitutes a positive result by the different investigators, or on some factor connected with the cases selected for the test. There is perhaps no test evolved in recent years, of equal value, that is so liable to lead to erroneous conclusions, due to its employment by the inexperienced.

As practically all the tests made in the above series were made by experienced workers, many by direction of Wasserman himself, they may be taken as reliable, and we must account for the wide discrepency in results on some other basis than inaccuracy of observation.

It has been found that a certain number of hereditary specifics gradually lose their positive reaction as they become older. We may perhaps have here a partial explanation of the variation in results. Dean, in his series of 330 cases, in the Pottsdam Asylum, takes this factor into account and classifies his results according to age, finding that of those under 11, 21.27 per cent were positive, of these from 11 to 15 years 16.9 per cent.; 15 to 20 years 6.06 per cent.; 21 to 30 years 12 and one-half; and 31 to 44 years none. Two hundred forty of his cases were over 10 years of age. Only two were under five years. He believes that the age factor may explain the contradictory results hitherto obtained. He argues well in saying that his percentages might have been higher had he been able to select younger children.

It is evident in a survey of what has already been accomplished that we cannot rely on this test alone as a true index of the specific etiology of these brain defects. It is of value as a positive factor in those cases where neither history nor direct nor collateral examination affords a clue to the causation of the condition; but it must never be considered an exclusive reaction. We known from purely clinical observation that evidence of specific infection exists in from 11 to 23 per cent. of the cases of intellectual defect in children. In 77 of his cases that responded negatively to the Wasserman, Lippmann found evidence, in either the history or examination, of syphilis in 40 per cent. In 44 cases without any history whatever the examination alone gave evidence of syphilis in ten.

Placing these two classes of cases together, therefore, we have 33.8 per cent. of cases negative to the Wasserman, where either history or examination of the patient demonstrated the existence of specific taint.

It is possible that future study may reveal other tests that may give us more assistance in determining the existence of hereditary syphilis in a higher percentage of these cases, but at present the Wasserman and allied tests cannot be relied upon as excluding evidence. Just what percentage systematic thorough clinical investigation will in the future reveal cannot be definitely foretold, but it will, I believe, be somewhere near the higher of the percentages obtained by Heubner, Binswanger, Ziehen and others; 11 to 23 per cent. I can say from my own investigation, not yet published, that the most casual clinical study of the situation proves the figures of Brown, Down, Waschsmut, Shuttleworth and Heyn, entirely erroneous (namely 0 to 2 per cent.)

1. Bruck, Die Serodiagnose der Syphilis, Berlin, 1909.
2. Mott, Archives of Neurology and Psychiatry, 1909, Vol. 4.
3. Lippmann, Munchener Med. Wochenschr, 1909, p. 2417.
4. Kellner, Clemenz, Bruckner and Rautenberg, Deutsch Med. Wochenschr, 1909, vol. 2, p. 1827.
5. Raviart, Brenton. Petit, Gayet and Cannac, Revue de Medicin, 1908, p. 840.
6. Dean, Lancet, 1910, Vol. 2, p. 227.

Disorders of Metabolism, Growth and Nutrition.

Under the Charge of

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Should Ecclamptic Mothers Nurse the New-Born?—Jas. R. Goodall, (*Montreal Med. Jour.*, Vol. XXXIX No 2, Nov., 1910, pp. 737-751). Goodall narrates the histories of three cases in which ecclamptic mothers nursed their infants with disastrous results. The children suffered from cyanosed cold extremities, shallow, irregular respirations and recurring muscular rigidity before death. In the discussion he propounds the following questions. Are children born of ecclamptic mothers healthy at the time of thei birth? This he answers in the negative, discussing the literature quotin freely. The urine of the children contains albumin and autopsy shows lesions similar to their mother's.

Is an ecclamptic mother's milk toxic? This he answers affirmatively arguing from analogy that bacteria and toxins are excreted in the milk.

If a mother's milk is toxic why should it be to the infant, which has been nourished through her own blood? Can a mother's milk secrete a concentrated, and accumulative toxin more virulent than that which circulates in her system? Let me begin by answering the second question first: We have no evidence which we can bring to bear upon this question. The clinical evidence is slight, but of great value. But by analogy we have the strongest proof that such can be said in the case, that the mother's milk can secrete a more concentrated toxin than that which circulates in her blood. Let me but refer to an experience of my own, in which, owing to gall stone attacks, I had administered two one-quarter grains of morphine within twenty minutes, yet the foetus in utero, so far as auscultation was concerned, showed no untoward effect, but the administration of a one-quarter grain six days later, and four and one-half days after the delivery of the child, caused the most alarming symptoms in the nursing infant. In other words, it got a more concentrated or larger dose through the milk than through the mother's placental circulation. You will probably object that morphine is a respiratory depressant, and that the respiratory centre is inactive in utero. To this objection let me state that the ecclamptic toxin acts also as a strong respiratory depressent in the foetus, and its action is very similar to that of morphia, so the objection becomes, on the contrary a very strengthening argument.

In conclusion he says:

1. In a mother profoundly toxaemic and jaundiced, I think it will be well to feed artificially for quite a few days, and have the breasts pumped dry once or twice after the maternal toxaemia has improved, and before the child is allowed to nurse.

2. If the maternal convulsions come on postpartum (these are the most dangerous cases for the nursing infant), then allow the maternal elimination to go on until she is freed from the greater part of her toxemia, and then empty the breasts before allowing the child to nurse.

3. Does the albuminuria persist after gestation, it will be well to feed artificially throughout.

The Induction of Pancreatic Activity by The Removal of The Adrenals.—J. E. Sweet, M. D., and Ralph Pemberton, M. D., (*Archives of Internal Medicine*, Nov., 1910, Vol. VXI, No. 5, p. 536). The relation of the adrenals and pancreas is close. This was shown by the inhibition of pancreatic flow by subcutaneous injection of epinephria and the induction of flow by absence or insufficiency of the adrenals. The experiments were conducted on dogs and graphic records of the experiments accompany the paper.

A Case of Fatal Iodine Chloride Poisoning.—Harlow Brooks, (*Archives of Internal Medicine*, Nov., 1910, Vol. No. 6). This case was one which a stock solution was used for rectal injection instead of normal salasie (.9 per cent.) The symptoms were restlessness, thirst, unconsciousness and rising temperature and death.

From experiments on rabbits it was concluded that the symptoms were due to the concentration of the body fluids by withdrawal of water by excretion and for the larger solid viscera. This results in destruction of the ganglion cells. There was no lesion in the kidneys of the animals discovered at autopsy.

Human Milk and Breast Feeding.—Dr. Olive M. Elgood, (*Br. Med. Jour.*, Oct. 15th, 1910, p. 1139). The infant's weight chart was compared with the milk and as a result it was found:

1. The constituent of human milk most important to the healthy growth of the child is the fat.

2. To maintain the healthy growth the percentage of fat content in the milk must be kept at a constant level and must not be allowed to fluctuate. Therefore in treating any given case the examination must be made frequently to ensure that this constancy is present.

3. To maintain both the necessary constancy of fat percentage, and a good quantity of milk in the breasts, the nursing mother should be fed with regular meals.

4. Lastly, a point of physiological interest, that the variations of fat are not dependent upon increasing concentrations of the milk as lactation proceeds, but are actual variations in the secretion dependent upon some accidental and temporary variation in the physical condition of the mother.

Acetonemia in a Young Child.—John M. Cowy, M. D., (*Br. Med. Jour.*, Oct. 15th, 1910, p. 1137.) A child of three had five attacks of nausea vomiting and disturbed breathing of asthmatic type. In one of these attacks there was scanty urine containing acetone. The last attack was releived by a rectal injection of sodium chloride. In this case several of the attacks occurred while the child was on a diet consisting largely of carbohydrates.

Magnesium Poisoning, Study of Ten Cases.—Wm. F. Bors, (*Journal A. M. A.*, Vol. IV. No. 24, p. 2037). The giving of epsom salts in more concentrated solutions that three per cent. is deprecated. This is the per cent. concentration for cathartic action. The salts cause death through concentration of the body fluids and a paralyzing effect on the centres of respiration and on the intestines.

BOOK REVIEW.

The Diseases of Children, by Henry Enos Tuley, M. D., Professor of Obstetrics, University of Louisville, Medical Department; Visiting Physician, Masonic Widows' and Orphans' Home; Secretary of the Mississippi Valley Medical Association; Ex-Secretary and Ex-Chairman of the Section on Diseases of Children, American Medical Association, etc. 600 pages, handsome cloth binding, $5.00. Sheep, $6.50 with many illustrations. St. Louis, C. V. Mosby Co., 1910.

This volume contains a full and complete exposition of the world's best and latest knowledge in pediatrics. The work is written especially for the student and general practitioner, and presents a description of the diseases of children as they are seen by the busy physician, and contains a well balanced presentation of the science of pediatry.

Dr. Tuley firmly believes the question of infant feeding to be one of the most important with which the general practitioner has to contend, and he, therefore devotes more space to this subject than is usually found in modern text books. The author lays special stress on the necessity for certified milk commissions and urges the establishment of milk depots where certified milk may be had. Dr. Tuley handles the subject of "Infant Feeding" in a masterly manner, giving the latest information on a most important subject in a manner that is simple, easily grasped and readily put into practice.

The author considers each diseased condition in a methodical manner. giving special attention to the dietetic and hygienic management. He devotes sufficient space to etiology and pathology, leading up to a full consideration of the more directly practical subjects of diagnosis, including differentiation and treatment, which is thorough and definite. We cordially recommend the work to our readers.

Dawn of the Fourth Era in Surgery, and other short articles, by Robert T. Morris, M. D., Professor of Surgery, New York Post Graduate Medical School and Hospital. 12mo. of 145 pages. Philadelphia and London W. B. Saunders Company, 1910. Artistically bound. $1.25 net. W. B. Saunders Company, Philadelphia and London.

This little volume contains 12 essays in Dr. Morris's inimitable style. There were so many requests for this article that the author was not able to supply them and he, therefore, thought it wise to incorporate all of it under one binding, which includes the following subjects: The Hand of Iron in the Glove of Rubber; Gall Spider Cases; Back to an Old Idea; for it introduces a new principle in surgery; Advantages of Expeditious Surgical Work; McBurney's Point and another Point in Appendicitis Work; Protective Appendicitis; Palpation of the Appendix; Dawn of the Fourth or Physiologic Era in Surgery; The Idea of Gross Cleanliness in Surgery, and its harmful results; The Choice of Proceedure in Cases of Loose Kidney; Management of the Adipose Layer in Suturing. Which makes a very readable little booklet, and especially valuable to physicians and surgeons. It is entertaining and well worth the shelf space and cost to any physician.

Food and Feeding in Health and Disease, a manual of practical dietetics, by Chalmers Watson, M. D., F. R. C. P. E., Assistant Physician, Royal Infirmary, Edinburgh, Editor of the "Encyclopedia Medica." Oliver & Boyd, Edinburgh, Tweeddale Court, London, 10 Paternoster Row E. C., 1910. American Publishers, William Wood & Co. New York City. Cloth $4.00 net

The author's aim in presenting this work to the profession was to provide a complete and practical epitome for the student of dietetics. It has been truly said that "No one can be an accomplished physician who has not made the subject of dietetics an important part of their professional training and education."

The author very satisfactorily instructs the reader in the elements of physiology, the nature of foods, and the normal laws of feeding as well as the deviation by which the action of these laws is modified. Culinary art is a very important essential to provide a suitable daily menu which will be agreeable to the invalid. The author very concisely presents just this information, suitable for the every-day requirements of the general practitioner.

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EDITORIAL

THE CONTAGIOUSNESS OF PNEUMONIA.

After prolonged discussion the contagiousness of pneumonia is now admitted by most authorities. After a brief review of the histories of several epidemics and of the literature on the subject, M. A. Jussu, Paris, France, asserts that the pneumococcus is capable of causing pneumonia, whether its source be an abscess, an otitis or a pneumonia. Contagion is either direct or indirect. When direct, the vehicle is usually the expectoration, which contains active pneumococci as long as the disease lasts, and frequently for a considerable period thereafter. Other excretions may also contain the specific organism. Indirect contagion may occur through fomites or even a healthy individual. Direct contagion may show itself within a short time, or may be delayed many days or even months.

The writer also calls attention to the possibility of the transmission of pneumonia from mother to fetus through the placenta, as well as that of transmission from mother to infant through the breast-milk. Although he considers that pneumonia is most surely contagious, he nevertheless admits that contagion is comparatively infrequent. This is due to two principal causes—either the virulence of the organism must be increased or the resistence of the patient lessened. The causes of variation in the virulence of the germ are many, and are but poorly understood. It would seem to vary in virulence in different months, even in different years. A fall in temperature, changes in atmospheric pressure and in hygrometric conditions have much influence. Diminution of resistance of the patient may be either congenital or acquired. As an instance of the former is cited the peculiar susceptibility of the negro, as pointed out by M. Marchaux. However, diminution of resistance on the part of the patient is usually acquired. It may be due to some general condition, as syphilis, grip and the like; or to some local condition, as asthma irritation from the inhalation of metallic dust, and so on. From these considerations it follows that careful prophylaxis should be insisted upon. The sputum should be disinfected by heat or antiseptics. Walls should be white-washed and woodwork washed with strong antiseptics. Bedclothes, hangings, rugs, etc., should be disinfected by steam under pressure. The mouth of the patient should be kept as clean as possible, both during the attack and for some time afterwards. Those in attendance on the patient should be most careful to keep their mouths clean and should use large loose gowns on entering the sick chamber, as is done by careful attendants in cases of other infectious diseases.

SLEEP FOR CHILDREN.

Some remarkably interesting treatise have been recently published relating to the scientific phenomena of sleep. The authors of these works, while agreeing in the main with the efficacy of "sleep as nature's sweet restorer," still hold the opinion that too much sleep is decidedly harmful, and that the majority of people indulge in the habit to a greater extent than is good for their health. Their views, as expressed on the subject in regard to young children, are both instructive and novel, and in brief are somewhat as follows: That even infants at the breast are allowed too much sleep; that they need not only time to sleep but time to awake if their intellect is to be awakened. The tendency to sleep shown by children and the uneducated is explained on the ground "that their psychic world is so poor that it is almost impossible for them to take any interest in their own thoughts and ideas. It is argued that even during the first four or six weeks of life there ought to be two waking hours during the day, and as the baby grows the duration of wakeful period should gradually increase. All methods of putting children to sleep artificially by means of monotonous sensations are strongly censured, including the crowing of lullabies and the rocking of babies in cradles or simply in the arms. Rocking the child in the arms or cradle is said to produce sleep partly because consciousness is fatigued by a series of monotonous sensations and partly because at the same time artificial anemia of the brain is provoked. Finally the approximate period of sleep necessary for children at different ages is given. Between the ages of one and two years there should be from six to eight waking hours; between two and three years, seven to nine waking hours; between three and four years, eight to ten waking hours; between four and six years, nine to eleven waking hours; between six and nine years, twelve to fourteen waking hours; between nine and thirteen years, fourteen to sixteen waking hours." There is much common sense in the foregoing remarks, but there is also a tendency to rather unduly press the point as to the harmfulness of oversleeping, particularly in the case of very young infants. Rocking a child in the cradle to any great extent is doubtless harmful, but it is difficult to understand in what manner the "crowing of lullabies" can effect the health of a baby. It is also no easy matter to fix the amount of sleep that a person—child or adult—should take by any hard and fast rule; a large degree of latitude must be allowed in this respect, as it is an absolute fact that individuals of different temperaments and constitutions require varying periods of sleep.

OBSERVATIONS OF THE X-RAY IN THE TREATMENT OF FRACTURES.

Probably the most costly errors in medicine are errors of observation, and these may be as readily made by those who use the X-ray as by those who use the stethoscope, the ophthalmoscope or almost any other scientific appliance. Unfortunately, radioscopy gives no short cut to knowledge. The shadows that we obtain require experience and thought for their interpretation. It is perhaps difficult not to endeavor to see in haze shadows just what we wish to see. Sometimes there may arise a tendency to misinterpret delicate shadings, and to regard them as proof of preconceived notions as to pathological conditions present. To arrive at trustworthy conclusions in obscure cases, requires, besides an unbiased mind, intimate knowledge of many facts.

In children and young adults ossification and epiphysial lines must always be borne in mind. Again, anomalies due to anatomic reversions and the like may be encountered. Comparison with the sound side will generally eliminate this last source of error. In obscure conditions, about the hip-joint in children, we may go far astray if we be unfamiliar with the shadows cast seen by cartilage only, partially ossified, under different intensities of illumination.

Again, unless pictures be taken from different aspects of a limb, fallacy is easy. A very crooked bone may show a straight projection in one plane. Patients are entitled to know the advantages and dangers of this aid to diagnosis, they may accept it or not, as they see fit. It is certainly true that a bone seemingly set in a most artless fashion when viewed in the light of the X-ray may be functionally practically perfect. This may at times have a most important bearing from a medicolegal standpoint.

SOME REMARKS ON MEASLES.

The name measles carries one's memory far back to the days of one's childhood. There are a few complaints, as measles, whooping cough and scarlatina, commonly termed adjuncts of childhood, and which for a person not to have contracted in his youth, seems somewhat of a reproach. Such an individual is lacking in the ordinary early experience of his species. Measles is generally regarded as a trifling definition to which little or no danger is attached. The usual definition of the disorder in a medical text book is much as follows: "Measles is an acute specific fever of short duration, characterized by catarrhal symptoms and a red rash, the latter appearing on the fourth day. It is a disease of childhood, and rarely occurs twice in the same subject. If the patient is well nurtured and kept under good conditions it usually ends in a speedy and complete recovery." This description may be applied with truth to a mild attack, and where the facilities for good nursing and care are available, but what of an epidemic in the overcrowded poor districts of a large town, where such conditions are wholly wanting? The fact appears to be too often overlooked that measles is in a high degree infectious at every stage. Consequently, when an outbreak occurs in a school, hospital, or any other place where children are massed together, the infection will spread like wildfire. Scarcely any of the infectious diseases are liable to so many severe and fatal complications. Nevertheless measles is still looked upon as comparatively harmful, requiring little or no treatment. This belief is assuredly not warranted when the disease gains foothold in the poverty stricken parts of a large city. It would appear that the time has come when more attention should be paid to the prevention and treatment of these so-called simple diseases of childhood, particularly when the fact is considered that measles and whooping cough are responsible for much of the present alarming infantile mortality.

PEDIATRICS

ORIGINAL ARTICLES

ERRONEOUS IDEAS ON INFANT MORTALITY AND METHODS OF REDUCING IT *

BY
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The result of the past year's work throughout the country to reduce infant mortality, with but few exceptions, shows that we are far from solving the problem. This most noble and worthy scientific Association, has gathered its members together for a full discussion of the knowledge acquired in the study of this most vital question.

The time alloted to a paper is short and will permit only of stating some facts which should perhaps be treated more in detail. I shall therefore, treat of our shortcomings and try to show the missing links in our chain of work.

Three great agencies have been actively working for several years to combat the great mortality among infants—Municipal and State Health Departments;—the medical profession; and various allied philanthropic organizations. The work of most of these agencies has been individual, rather than co-operative, and while the plans of work have been, with a few exceptions similar, the results obtained have varied widely. The keynote of most campaigns has been education, to teach the mother with a well child how to properly care for it.

To accomplish this end, tons of literature, and circulars of instruction, in all languages, have been distributed; posters have been placed in houses; trained nurses and physicians have visited the homes, and mothers' meetings and clinics for the examination of well infants have been held.

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*Read at the first Annual Meeting of The American Association for the Study and evention of Infant Mortality at Baltimore, M. D., November 9-11, 1910.

"To Keep the Well Baby Well," is a good motto, but how many mothers having a well baby, can be induced to attend a clinic, to spare time away from home duties and other children? Some mothers may make a first visit out of curiosity; other mothers who previously lost a baby may be willing pupils and attend every clinic. Even with the trained nurse visiting in the homes, the mother with a well child, although fed contrary to all rules laid down by the medical profession, heeds very little of the advice given by the nurse. The nurse can teach her cleanliness of both house and baby; and while the mothers usually welcome the reporting of unsanitary conditions of the house, on the crucial point, the feeding of the child—No—If a baby is well and is being fed on cucumbers and fried sausage, so let the feeding remain. However, if the baby is sick, all advice is not only followed, but eagerly sought for. In fact, so eager is the mother for advice, that she changes plans sometimes three or more times a day. I do not want to give the impression that I believe these educational methods are valueless, but directing them towards the well child is not profitable. Better results are obtainable in health work by the trained nurse in the field, than by the dissemination of literature.

An opportunity for education, often overlooked, is the school child. The "Care of Baby" taught to the older girl pupils by lectures, exhibitions, text books, would have its ulitmate good effects. They are the potential mothers, they know they come to school for instructions, and they learn and retain more readily information which is novel and out of the ordinary. Philadelphia's experiences showed how intensely interested these pupils were.

Our school courses on hygiene should receive careful attention, and from work along this line of endeavor, much may be accomplished.

Another potent means of education, and too often ignored, is the public newspapers. We underate their true value in campaigns against infant mortality, or any other health problem. It is surprising how often a mother says she did so and so, because she read about it in the newspaper. Again, some health officers who appreciate the value of the press, in many cases, lose the benefit that could be derived by leaving the construction of articles and stories bearing important advice, to a reporter inexperienced in medical knowledge; valuable advice is misstated or important parts omitted.

Every Health Department should have a Publicity Bureau, in charge of which should be a competent editor, one capable of writing news items on questions of public health in an interesting style, that would appeal to the public. He should have a working knowledge of medical subjects, especially pertaining to questions of sanitation. Valuable advice flavored with scientific figures of investigation, is lost to the public. The same advice written in a popular, breezy style, attains the object, namely, the instructions of the people. The head of a health department of a large city, engaged on executive duties requiring his attention, can spare but little time to write articles for newspapers, and then spend valuable moments interviewing reporters. Newspapers eagerly seek for articles on public health, and medical questions. A glance at any daily newspaper proves this assertion. The public is hungry for this kind of advice and education. Give it to them, but in a form that is palatable and digestible.

Most health bureaus are hampered in their work by lack of funds to carry on their plans. Insufficient funds for health measures are due to the public themselves. Appropriations are alloted by representatives of the people, who are usually politicians, offtimes with an undeserved reputation for selfishness and for furthering their own interests, yet they try to give the people they represent that which is asked for These representatives are guided by public opinion which is largely molded by the newspapers of the day. Use them for honest purposes, as they have done more for furthering health measures, than any other agency.

It is admitted by all who have given thought to the question of infant mortality, that it is mainly a question of proper feeding. We look to the attending physician for the proper feeding of the infant. If he has attended the mother in her confinement, we suppose he looks after the welfare of the child until it is truly started in life. That time being when it has passed all possible dangers following birth, and is receiving its proper nourishment. How many physicians carry out but part of his contract? Few ever know afterwards whether the child is breast or artificially fed. The people realize this so well that it is seldom the mother asks the physician who confined her, anything about the nourishment of the child. If the first attempt at feeding is unsuccessful, the mother more often applies for advice to another physician, after repeated experiments by herself and neighbors. The question then arises, is this due to disinterest of the physician or does he not know how to feed the new-born?

I believe it would be no exaggeration to assert that fifty per cent. of the medical profession make no effort to supervise or prescribe any feeding for the infant, leaving it entirely to the mother or caretaker. Of the remaining, forty per cent. order some popular patented or proprietary food, thus allowing the mother to follow printed directions which come with the bottle. Nine of the remaining ten per cent., of the profession, follow some set rules on percentage, or other methods of feeding, based on age. The remaining one per cent., termed specialists, feed scientifically according to the requirements of the child. The millions of bottles of the various patented baby foods sold annually, is testimony to this assertion.

By scientific infant feeding, I mean adapting cow's milk by modification, to suit a baby's digestion, and giving it in quantities and at intervals, which conform with the baby's normal capacity. Some physicians claim that the majority of patients allow them but one or two visits. The first formula in most cases is an experimental one, to test the capacity of the child, so this class of patients places the physician at a disadvantage.

The courses on pediatrics and infant feeding, as given in most of our medical colleges are faulty. They are not practical, and in most cases, the teacher has some system, whether percentage, caloric value or otherwise, generally based on age, which leads him to teach one of the mass methods of feeding. Occasionally, the professor teaches a half dozen methods with scientific calculations which bewilder the students. There should be ward classes in this branch similar to those now used in other branches of clinical medicine.

No one physician has the only absolute method of feeding, and because he uses the top half ounce of four bottles of milk or the 16 per cent. cream, he has not "cornered the market" on the right method of feeding. Infants will thrive on any of the combinations providing the mixture is suited to the digestion of that particular child. The physician who believes that his method is the only one to scientifically use, forgets that four and six equals ten, three and seven equals 10, and there are other equivalents. When he succeeds with his methods, it means he has given to the little patient all the nourishment it needs, and can digest. The capacity of an infant should not go any more by age limit, or rule of weight, or size, than disposition or temperament should be alike at certain ages or body weights. We have all seen infants three weeks old that required and digested the food of an infant three months old and vice versa. I believe infants are often victims of starvation by faulty methods of feeding. The parent experiments for awhile, and when things look desperate, rushes to the physician, who offtimes removes the little remaining nourishment and purges the already weakened infant. Too often the cry of the child is mistaken for pain, when it is due to hunger, to food omitted for 24 or 48 hours, instead of increasing the quantity or quality of the feeding. The frail body is brought to a pier at the river front and the child is supposed to suck from the fresh air of the river, the nourishment which should have been supplied by the mother.

Not only must the food contain the proper nourishment for the infant, but small details of technic in its administration together with cleanliness and purity of food, counts for much. Too few physicians observe the kind of nipple used, the size of the holes in the nipple, how long the child nurses, and the condition of the child's mouth. This is all left to the nurse in charge, or the mother. Few mothers have nurses, and the average stay of the nurse with the child is two weeks after birth. Few mothers are good nurses. Many a child refuses food because of the flowing too rapidly through the nipple, and inattention to other seeming trifles affecting the feeding. Many physicians never personally observe the bowel movements, but may occasionally ask the mother about the presence of indigested fat, curds, blood and mucus. It is needless to say how little reliance can be placed on such reports.

We may evolve fanciful theories about the causes of infant mortality, we may show its relation to climatic conditions, humidity, location of the city, mean temperature and influx of ignorant foreign population; but we overlook the cornerstone of those preventable deaths, due to gastro-intestinal disturbances, when we ignore the relation of the medical profession and infant feeding to the problem.

Fresh air tents, piers, visiting nurses and milk stations, are all auxilliaries in this battle. Fresh air gives stimulation. The modified milk stations supply some or all of the nourishment, depending on many circumstances. Visiting nurses may correct errors of living or hygiene, but infants must have the prope diet to thrive on.

This inaction on the part of the greater number of physicians seems sufficient evidence that they would willingly give up this branch of infant feeding to their assistants, who would undertake the work. The physician could readily give it up to the nurses without feeling that medical duties were being usurped. The work of health departments in reducing infant mortality would be greatly augmented by the training of a corps of municipal nurses in infant feeding; or, a corps of physicians similarly trained—and assisted by a corps of trained nurses, to teach the mothers how to prepare the food and give it to the infant.

The present method of utilizing the services of trained nurses to educate mothers in two or three visits of five to thirty minutes, is a mistake. Of this time, part is taken up with the recording of the history of the infant, together with a study of the surroundings. I believe, not only from an economic standpoint, but also from the more efficient services to be obtained, in the employment of trained social workers to visit the homes, to obtain histories and to aid in the campaign of education. This would leave the nurses sufficient time to spend in caring and nursing the sick infants and supervising the feeding. I believe that such a well trained corps would make mortality from diarrhea and enteritis a thing of the past.

There seems to be objections advanced against the giving of free medical services, and even nursing. Chief among these objections has been the fear of paternalism. The cries of paternalism, socialism, destruction of the individuality, and self dependence, pauperizing the poor, have come from a handful of social workers, unacquainted with the true state of affairs, and from them echoed into the mouths of controlling powers of municipal governments. Through this grave mistake, there is constant fear of over-stepping in such charities as giving free medicine and nursing, milk and ice, feeding the infant, and when necessary, supplying the food, probing into home conditions and the many things which make up proper healthful living. The time for believing the health of the infant is the business of the parent, and no one else, is past. We make it our business that the child shall have an education—how he shall be educated, and how long. "The infant of today is the school child of tomorrow." If the infant is not receiving proper nourishment and care, whether through ignorance or neglect, it is the duty of the municipality to furnish the personal care and attention required. The question as to whether a so-called family physician is in attendance, when he has shown himself incompetent to manage the case, is no reason why we should shout "hands off," let the child die. If a physician has diagnosed a case of small-pox, one of chicken-pox, the city corrects the mistake and acts accordingly. Eventually, the proper authorities must take care of these problems, and only then will the question of infant mortality be solved.

Institutions and baby farms add materially to the death rate among infants, and it is only by stringent laws and active supervision that these sources of mortality can be controlled.

The value of individual feeding according to the infant and not according to age, is very interestingly told in the history of one large institution for children, located in Philadelphia. In 1909, this institution fed all the infants according to age, on a series of set formulas of milk mixtures, the children were cared for by nursery maids. In June, 1909, this institution, based on the number of sick children, had about 65 per cent. of deaths. In July, 1909, about 55 per cent., and a similar death rate for August. In 1910, the managers employed a physician who was well trained in diseases of children and infant feeding; they also substituted trained nurses for the nursery help. Each child was carefully examined and watched, and fed according to the physician's advice. The results were—for June, 1910, 14 per cent. mortality; July, eight per cent. and August but 4.4 per cent.

Mistakes occur in assuming that the education of mothers as to the care and feeding of their infants is sufficient. To illustrate: Birth reports are received at the central office of the health Bureau, and within 24 to 48 hours a nurse is dispatched to the home. She may find the child being fed on the breast apparently normal, surroundings good—case is considered safe by the nurse and closed. One month later comes the death certificate. What has happened? The nurse's visit was made at a bad time for observation of true conditions. The mother was shifted to her own responsibilities. Wrongly or rightly after about 10 days trial of breast feeding, the mother is led to try the bottle. She tries mixture after mixture, thought out by herself and assisted by neighbors. She continues to experiment until the baby's condition is alarming, when she calls in a physician, who removes all food for 48 hours, to give the starving baby's stomach a rest. Vitality is now so low that a few hot days sap up what remains of its strength. A second visit of the nurse would have probably prevented this death.

A study of the infants, especially of the poor and middle class, whose mothers are not influenced by social aspirations, shows that most are first fed on the breast and after two weeks trial, for various real or imaginary suppositions, artificial feeding is resorted to. About one month after the birth, is the time for a nurse's first visit, or still better, a re-visit in all cases, even in the safest appearing cases.

The impression is universal that the death rate depends partly on the intelligence of the people, and that the poor dwelling in slums and tenements, because of their ignorance, have a higher death rate than the wealthy, intellectual, social classes.

In the care of infants, excluding the question of sanitation, lack of which is more often due to poverty, the wealthy mothers have no more, if not much less, knowledge of the care of infants, than the average dweller of the slums. Among the wealthy, a trained nurse is employed for the infant, and when well or sick, the advice of specialists on diseases of children and infant feeding is secured. When the hot summer months come, they can spend the entire term in the country or at the seashore.

Every city tries to compensate the poor by offering them the comforts of well equipped hospitals, and the services of these same specialists who visit the hospitals. In summer many philanthropic and charitable organizations send children to the seashore or country for varying periods. A directory of hospitals and charitable organizations in any large city is a voluminous and imposing sheet. Have you, however, studied the true state of affairs in your city?

The following information which I gathered from all of the hospitals of Philadelphia makes an interesting study of these institutions in their relation to infant mortality:

Total number of hospitals, 64.

General, 43; children, 2; Special, 19; dispensary only, 11.

Number having FREE BEDS for infants, 18.

Admitting children at any age, 12.

Not admitting under age of two years, 7.

Having a separate ward for infants, 14.

Number of available free beds in summer months: for children of all ages, 264; for children over two years, 56; when under 15 months, with mother, 50.

Two hospitals alone, 130 beds; balance, 134.

Number of available FREE beds in winter, 267.

Number closing children's ward in summer, 1.

Number having a dispensary service for children, 22.

Number of free patients (under age of two years), admitted to all hospitals during July and August, 1910, 782.

Admitted to three hospitals alone, 554.

Admitted to remaining 15 institutions, 228.

Number of these 782 cases which had gastro-enteritis, 255.

Admitted to three hospitals alone, 183.

Admitted to 15 remaining institutions, 72.

This analysis of the hospitals of a large city tell most certainly that there is insufficient hospital facilities for the children of the poor, especially in the early infancy. The reason for this unfortunate state of affairs, I cannot state. That this condition exists to an alarming extent is evident to any physician who makes an effort to place a child in a hospital, sometimes a half dozen hospitals are asked, before he succeeds. The questions which suggest themselves are—Why should only two-fifths of the hospitals doing a general class of work have beds for infants? Why should more than one-third of those admitting children refuse infants under two years? In a city which is considered as one of the medical centers of the country, and one of the most charitable cities, why should there be so few available free beds for children? In a period of two summer months, when sickness among children is at its height, is 228 patients under the age of two years, with all kinds of diseases, a fair average for 15 hospitals admitting infants? This means an average of 15 free infants for each such institution in two months.

The enormous value of fresh air, country or seashore for the sick child, especially in cases of diarrhea and enteritis is well recognized. Every large city has a long list of seashore and country homes for the care of the children of the poor during the summer months. Have you ever analyzed the list of these institutions in your city? You may find many that will give a day's outing, and a few who take many well children over the age of five to ten years for one or two weeks, at the shore or country—But, how many have you that take *sick* children? Philadelphia has but two, and these have limited capacities. I believe it is a great mistake to care only for the well child and ignore the sick. Two great factors in controlling infant mortality—proper hospital care for the sick of the poor, and fresh air at a seashore or country home with medical care, are found wanting.

While not desiring to discuss the value or non-value of the many advertised baby foods, their enormous sale is a direct evidence of the physician's neglect to nourish the infant. These "food for all babies" seems to save the doctor and the mother considerable energy in thinking out how the baby should be fed. It is easier for the doctor to order a bottle of Blank's Baby Food and have the mother follow the directions printed on the label on the bottle, than it is to study the individual baby and calculate how much cream, milk, water and sugar of milk is needed. It is easier for the mother to take a teaspoonful of powder out of a bottle, add hot water and serve, than to accurately measure milk, cream, sugar, etc. It is human nature to try and save labor. In recent years several large cities have tried to overcome this haphazard feeding, and at the same time save the labor for the mother, by establishing modified milk stations. The methods used by most of these stations is so faulty as to make them dangerous under certain circumstances. But few of these milk stations have a medical clinic at which the child is examined, formula prescribed by a physician and results noted. Most stations, dispense the milk indiscriminately according to the age or the wishes of the mother. An ignorant mother, knowing she can get either formula number one, which is dispensed in three ounce bottles, or formula number four, in six ounce bottles, for one cent a bottle, believes it is economy to buy the six ounce bottle. One is whole milk, and the other but one-fourth solids. It is needless to estimate what happens. Again there are a limited number of formulas or combinations, so the scope of proper feeding is limited. I have seen the woman in charge of a milk depot dispense a different formula to a mother, who had an order from a physician, because she was out of the formula requested. Few of the stations are open Sundays, and dispense on Saturday morning two day's supply. The food is taken to homes without any means of refrigeration. Pasteurized milk, even one hour off ice, is a more dangerous article, than other kinds of milk. Some of these abuses could be remedied by refusing to dispense milk from stations without an order from a physician or dispensary.

Modified milk stations with set formulas Nos. 1, 2, 3, try to make the baby fit the milk modifications, instead of the milk to fit the baby. It would be far better for the stations to supply less infants and do it as near individually as practical. The central branch having a chemist and a physician and each branch station having a trained nurse in charge, would overcome many difficulties. The modification should be made on physicians' or dispensary order, similar to the methods employed by the Walker-Gordon Laboratories which are available to the wealthier class. Such arrangements must eventually come, even if it must be under municipal ownership.

While many cities dispense milk and ice free to the poor, there is often a tendency to overlook the furnishing of milk to pregnant women, which would often assure breast feeding, when physical conditions without the milk would prevent it. Many a mother would give less table food to the infant, if milk were furnished to her for this purpose.

Infant mortality work has so closely corellated with it organizations dispensing milk and ice, medical clinics and modified milk stations, baby farms, lying-in-charities, seashore and country outing homes, that to attain best results, all of these agencies should be under the supervision of one competent head, with a central office as a clearing house.

The present methods of computing the mortality among infants are incorrect and misleading. The relation should not be shown to the total population, but to the population of infants of corresponding ages.

Comparison with the total death rate, is of some value. Another feature of vital statistics which has important bearing in a study of infant mortality, but for which there seems no remedy, is the inaccuracy of the diagnoses placed on death certificates by the attending physician. I venture to say that over fifty per cent. of the causes stated on these certificates are incorrect. Any one in charge of a bureau of vital statistics, even without a knowledge of medicine, could pick out many a certificate which they could positively state was mere guess work. This is not entirely the fault of the physician, as in many cases he has made but one or two visits, and must give some cause of death.

A comparison of the deaths in different wards based on supposed social conditions is misleading. Every ward, even the most aristocratic, has its by-ways and small streets containing the poorer element. The foreigner no longer confines himself to one section of the city, but makes small settlements in a number of wards.

When we state that the death rate among the poor, tenement or foreign population, is greater than that among the rich, we are not strictly accurate for we are estimating according to location in the city, knowing little of the social conditions of the individual deaths. There is a smaller infant population by one-half or three-fourths among the rich than among the poor. When a child of the wealthy takes sick, during the summer, it is usually out of town, and if it dies, that death is not registered against the city, or that section of the city. There are more breast fed babies among the poor and this compensates in many cases for the lack of luxury or sanitation. The methods of investigation should include a most thorough one of all deaths of infants, including relation to feeding and social conditions. Don't make figures and statistics gathered in unreliable and haphazard ways, fit your theories, but make theories proven by reliable scientific investigation.

DIETARY STUDIES OF UNDERNOURISHED SCHOOL CHILDREN IN NEW YORK CITY.*

BY

E. MATHER SILL, M. D.

New York City.

These studies were made with the idea of determining whether this malnourished condition of the children was due to insufficient or improper nourishment or other causes, and just how much influence the diet in these cases had on their condition.

It was found that the majority of the families studied, selected the different food material in the market with very little knowledge of their nutrient value.

Dietary studies were made in 34 families living on the lower "East Side" after the manner of Prof. Atwater, which was to keep an accurate account of the cost, kinds, amounts and composition of all food material used in each family for ten days. From this amount the cost, nutrients and fuel value "per man per day" was computed in cents, grams and calories. We were able to do this by means of the different foods published in United States Bulletins, giving the percentage of protein, fat and carbohydrates, and number of calories per pound.

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*Abstract of Article read at St. Louis, June, 1910, before the A. M. A., Journal of the A. M. A., Nov. 26, 1910, Page 1886, Section on Diseases of Children.

In order to do this work it was necessary to know the exact number of meals taken at home by each member of the family, the kind of work done by those members who worked, and the age of each, and according to this data using the necessary factors for the different ages, and occupations as advocated by Prof. Atwater. We obtained the amount of fat, protein and carbohydrates "per man per day."

Prof. Atwater in his dietary standards, states a man at moderately active muscular work should receive per day 125 grams protein with fat and carbohdyrates sufficient to produce a fuel value of 4,150 calories. In practically all the studies I made, the men did moderately active muscular work. The average of 28 of these 34 families studied showed the following "per man per day." Cost 19 cents, protein 95 grams, fat 68 grams, carbohydrates 407 grams, calories 2,614; thus showing a marked deficiency of all the ingredients and consequently the number of calories. It is only necessary to multiply these figures by the factor used according to the age of the malnourished child to obtain a correspondingly deficient diet for it.

Some six of these families had diets up to or above the ordinary standards and thus raised the averages, but the majority were considerably below what the standards call for.

In many instances the parents and the older members of the family were well nourished, while the younger children suffered from malnutrition and this could be accounted for in many ways, such as close quarters, late hours, infrequent bathing, eating candy between meals and thereby injuring their appetite for wholesome food, tuberculous infection, convalescence from disease, organic disease, adenoids, hypertrophied tonsils, etc. Another thing that is important in this connection and has been most strongly impressed upon my mind is that these malnourished children eat very little in the way of breakfast. The average breakfast of these children is tea or coffee and bread, as myself and others have shown by previous studies of hundreds of school children. It is well known that breakfast is a most important meal and that many children in New York City arrive at school too hungry to study.

The averages of these dietary studies showed that 61 per cent. of the money spent was for animal and 39 per cent. for vegetable food, slightly less protein was obtained from the animal food than from the vegetable food, over eight-tenths of the fat was obtained from the animal food and over seven-tenths of carbohydrates came from the vegetable foods. The vegetable foods furnished more than twice the number of calories than the animal foods did.

It was noted that practically all dietaries studied could have been improved in the way of lessening the expense and increasing the nutrient value. Many things were purchased which were of very little nutrient value, and things that could have been bought cheap for their food value were left out of the dietary. Thus very few families used more than a very small amount of the cereals, also a very small fraction of the diet consisted of the dried legumes. The bulk of the nourishment seemed to be gotten from milk, meat and bread. Foods, which require care and work in preparing were rarely used. Nearly all these families were very poor, but could have obtained a wholesome nourishing diet—for the money they spent and some for less money than they spent, if they had used better judgment in the selection and purchase of their food by having a knowledge of the nutrient value of the different foods in the market.

Since these studies have proved more conclusively the profound ignorance of the majority of the poorer class of people as to the nutrient value of foods and the most healthful and cheapest foods to buy, it is most important and imperative that steps be taken to educate in this respect, those who do the purchasing for the family, and the young girls, who will be future wives and mothers. The best way of educating the mothers as to the most nourishing and most economical foods to purchase and how to cook and serve these simple wholesome foods to make them inviting and appetizing is by means of large organizations, such as the Woman's Christian Temperance Union, the Salvation Army, the American Federation of Labor, and others equally far reaching, also through the United States Government by pamphlet distribution. Much can be done by the press, for instance, a series of short articles could be published in such papers as the Journal and the World in New York, and other widely read publications in this, and other cities, setting forth in simple language the high nutritive value of the cheaper foods and the best methods of cooking them to make them appetizing and wholesome.

Every girl should be taught in the school the different nutritive value of foods, which are best adapted to the different ages and occupations and how to cook these foods well before she is allowed to graduate. This knowledge will be of far greater value to her in after years than higher mathematics or languages, and will be the means of conserving the health and strength of the nation.

Every child, to grow steadily both in mind and body must have nourishing, well cooked food, suitable for its age, in sufficient quantities, given at regular intervals. Malnourished children especially require a high protein diet, and long hours of rest.

My experience has been, after treating hundreds of these malnourished children that their vitality is low and that they are not only more susceptable to many diseases, but when disease does occur, it is apt to be more severe and prolonged than in their better nourished brothers and sisters.

I am most heartily in favor of giving these undernourished children a healthful, sufficient, breakfast in the schools, as is done in England, Scotland and France, as it has been amply proven that this does not make paupers of either parents or children, and in this way much unnecessary suffering could be avoided.

Along the above indicated lines is the greatest field for the improvement of the poor and the proper development of their children in our great cities and philanthropic movements should be directed towards this end.

142 West 78th Street, New York City.

CONCURRENT SCARLET FEVER AND CHICKENPOX.

BY

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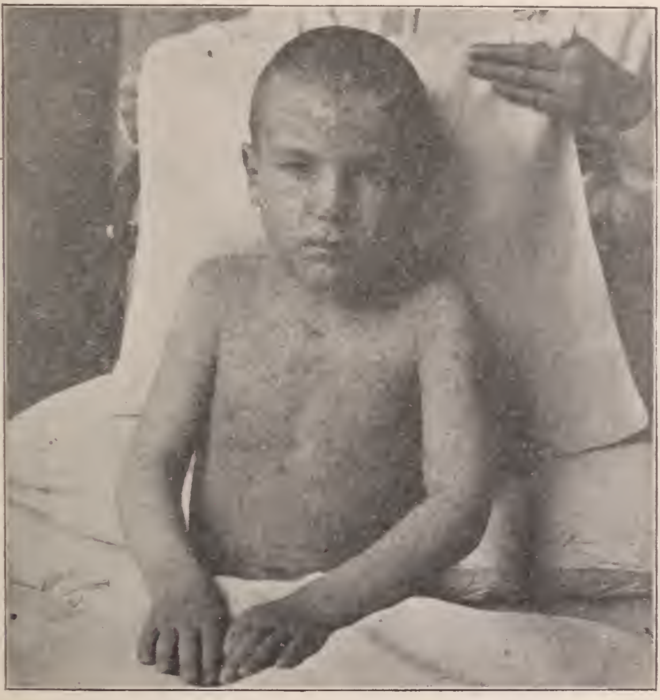
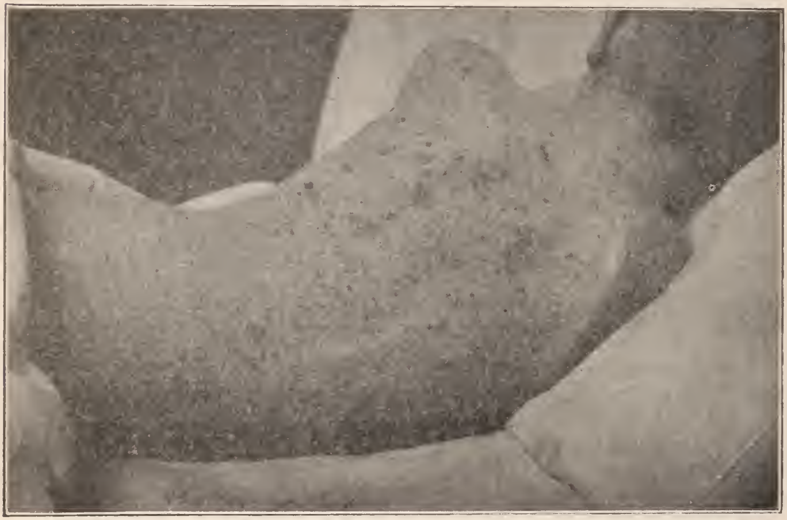
A boy, aged eight years was admitted to the Grove Fever Hospital on March 21st, 1910, certified to be suffering from scarlet fever on the third day of disease. He has been exposed to the infection of chickenpox three weeks previously. On admission there was a bright punctate erythema on the trunk and limbs and the fauces were injected. Temperature 100, on the 22nd the temperature fell to 98 and in addition to the scarlatinal rash numerous vesicles appeared on the scalp, trunk and limbs, and were followed by fresh crops during the next three days. On the 25th, when the eruption was at its height the lesions of vascilla were almost confluent on the face and trunk,



but discrete on the limbs, especially towards the distal extremities. The hands were quite free. Apart from a single basicle on the dorsum of the right foot. The feet were also unaffec,ed. There were three lesions on the palate. Morning temperature 107, evening temperature 104. On the 26th, when the first photograph was taken, the face was somewhat ocdematous. Morning temperature 100, evening temperature 104. On the 27th transient erythema of thighs, back and face was noted. Morning temperature 99, evening temperature 100. On the 29th when the second photograph was taken the varicella lesions were desiccating, and there was some peeling of the trunk. Morning temperature 97, evening temperature 99. Subsequent desquamation was very profuse. On the 31st the skin of the palms and fingers separated almost entire. On April 2nd a thickly-set popular rash appeared on the face, trunk and limbs unaccompanied by rise of temperature or other symptoms and gradually faded in the next few days. The temperature, which had reached normal on the 31st and had remained subnormal since, rose to 107 on April 14th owing to an attack of cervical adenitis associated with albuminuria, but became normal again the same day. On April 19th, the 28th day after the appearance



of the chickenpox the child was free from scabs. Von Pirquet's test performed on April 29th was negative. The boy was discharged in good health, on May 14th showing many pigmented scars.

The association of scarlet fever with varicella is not uncommon. Since 1899 an average of 88 cases of coexistent scarlet fever and chickenpox has been admitted annually to the Metropolitan Asylums Board Fever Hospitals in London, but in the majority of such cases the patient was incubating the second disease during the eruption period of the first; it is exceptional for the two eruptions to be in full bloom at the same time as in the present case.

Before asserting the coexistence of the two exanthemata one must exclude the possibility of accidental scarlatiniform rashes being mistaken for scarlet fever. The autonomous existence of scarlet fever in this case was established by the very profuse desquamation which followed—a phenomenon which is not met with after accidental rashes—and by the characteristic late adonitis.

I may here allude to another case of coexistent scarlet fever and varicella, which I have recorded elsewhere, remarkable for the occurrence of palpebral gangrene, in which the same complication of late adenitis occurred.

It should be noted that accidental rashes first of an erythema and later of a popular type did occur in the present case, but they were post-eruptions in relation to the scarlatinal rash. Such accidental rashes are most frequently met with when varicella is associated with some other acute exanthem.

The association of scarlet fever with varicella tends to make the latter more severe, as is shown by a more abundant eruption. A greater tendency for the lesions to suppurate and by a higher temperature and more prolonged pyrexia than is found in uncomplicated chickenpox. Among the few cases of confluent varicella on record, three at least have occurred in convalescence from scarlet fever.

The coexistence of tuberculosis, which has been noted in some cases of varicella gangrenous could be excluded, as the boy presented no clinical signs of the disease and Von Pirquet's test, which was performed in convalescence, was negative.

I would like to draw special attention to the mild character of the present case, which compares favorably with one reported some years ago in which the varicella eruption appeared eight days after the subsidence of the scarlatinal pyresia. In that case the varicella assumed the distribution of confluent smallpox, and was followed by secondary fever of ten days duration due to the formation of multiple cutaneous abscesses. The favorable course of the present case could be attributed in part at least to the soothing effect upon the skin of boracic baths, which were employed every morning and evening for a fortnight after the appearance of the varicella.

1. J. D. Rolleston, *Brit. Med. Journal*, 1905 i, p. 232 ibid, 1907 i. p. 1051.
2. id. *Med. Chron.*, 1909 XIX. p. 215.
3. Neech, *Lancet*, 1906, i. p. 515; Phillips, *Brit. Med. Jour.*, 1895, ii. p. 1355.
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4. Ibid.

THE MODIFICATION OF MOTHER'S MILK*

BY

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The fact that many infants are deprived of mothers' milk and start their life on a substitute can often be traced to the doctor. At college he learns a great deal about the modification of cow's milk but hears very little about the regulation of mothers' milk.

The mother is, however, the greatest obstacle to the nursing of her baby. Occasionally, this obstacle is absolutely insurmountable. Her social duties, her home duties, her outside work, all interfere in spite of the fact that there may be no physical reason why she might not nurse her baby. If married people can be brought to see that their main object in life is to have children and to rear them in such a way that the children will be better mentally, morally and physically than the parents, and if they can be shown the great advantage that the breast fed children have over bottle fed children, then nothing but physical disability will come between the infant and the mothers' breast. J. Madison Taylor and Francis P. Deming have recently emphaized the well known and interesting fact that the infant not only receives nourishment but prophylaxis against disease from the serum of the mothers' milk.

In order to understand the problem of modification of mothers' milk it will be necessary briefly to review the microscopic anatomy and physiology of the human breast. The human breasts may be regarded as cutanoeus glandular structures. Up to the age of twelve, the glands in the boy and the girl are identical. In the male there is a retrogression after this time; in the female they continue to grow and develop until after parturition. There is a marked difference in the microscopic picture of the functionating and non-functionating breast.

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*Read before the Richmond Academy of Medicine and Surgery, November 22, 1910

When fully developed, the breast is made up of about twenty lobes separated by connective tissue. The lobes are made up of many lobules which are divided into tubular alveoli. Small ducts go from these alveoli to unite others and form larger ducts. Shortly before emptying into the nipple, each duct widens to form a vesicle, the sinus lactiferus. The ducts are lined with simple, cubical epithelium except near the termination in the nipple where they are lined with stratified, pavement epithelium. The alveolar epithelium during rest is a single layer of cubical cells; at the beginning of secretion, fat globules appear at the distal end and they increase in size.

There are two theories as to the secretion of fat in the milk. Some think that the distal portion of the cell breaks off after undergoing fatty degeneration or infiltration and forms the fat globule while the same cell goes through the same process again. It is a fact that some cells are destroyed and are later replaced by others. The more probable theory is, however, that the epithelical cells select the fat, proteids, sugar, salts and water from the blood and pass them on as a secretion.

Benda describes basket cells between the membrana propria and the epithelial cells of the alveoli. These, he believes, are non-striated muscle cells and their contractions tend to force the milk into the ducts.

K. Bosch has proved experimentally that secretion of milk is independent of the nervous system. He transplanted lacteal glands of animals into their backs and found that these translated glands secreted colostrum after the animal was delivered. With extract of placenta and gravid ovary he was able to elicit a secretion of milk in animals and in a few clinical cases.

H. Crower ascribes great importance to the sucking of the nipple as the main factor in setting up the secretion of the mammary gland, and cites numerous cases that show that the mamary gland is, to a certain extent, independent of the genital organs, secreting milk when an infant was allowed to suck even before the termination of pregnancy. Mothers can leave their infants, says he, for weeks at a time and then be able to suckle them upon their return.

The only other glands that secret fat are the sebaceous glands; and while the mammary gland does secrete besides fat, proteids, sugar, inorganic salts and water, still the fact that no other save the sebaceous glands secrete fat, at once differentiates fat production as its special function.

Under the title, "The Persistence of Cell Function and Its Bearing on Pathology," Professor William von Leube, of Wurzburg, discusses a subject that seems to have an important bearing upon the physiology of milk secretion. The underlying principle is that there is a well defined tendency for each kind of cell to continue its work along certain characteristic lines which are determined for it during its organization and development. This is shown by the fact that many different kinds of stimuli acting on a cell will all cause the same effect; thus, the mucous glands secrete mucin when stimulated by heat, cold, toxins, chemical or mechanical stimulants. The difference in the effect produced by the stimuli is quantitative rather than qualitative.

The problem of modification of mothers' milk reduces itself to the proposition of so adjusting the stimuli to milk formation that the infant will thrive upon it. These stimuli are intervals of nursing, general exercise, massage, nervous condition and anxiety, food and drink, the baby's suction, and drugs. Some of these stimulate the retardation of milk secretion.

We must first know what normal or perfect mothers' milk is. There is no perfect milk that will suit all cases. One infant will thrive on a milk that will retard the development of another. For that reason it is well for us to determine the normal milk for a particular infant by examining the mothers' milk while the infant is thriving. But often we do not see the case until the infant is doing badly, so that it is necessary to have some sort of standard. This is obtained by taking the average of the milks upon which a number of infants seem to be thriving.

The average of the constituents of my cases, where the infants have been doing well, irrespective of the age of the infant (it is generally believed that the milk should remain about the same during the entire period of lactation) has been:

Specific gravity.	1031

Fats	4.05
Proteids	4.22
Sugar	4.33
Salts	.20
Total solids	13.82

The variation in these averages has been specific gravity, 1029-1036; fats, 2.9-5; proteids, 3.55-5.20. The averages are here rather higher than those of other observers. My cases have been in private practice and all of them have been native-born, white women.

If the infant is not thriving we must determine in what particulars it varies from her normal; or, in the event that we do not know what her normal is, from the average that has been determined by our own experience or that of some one else. The variation will be in quantity, or quality or both.

Quantity.—E. V. Davis, of Chicago, has worked out a very useful system for determining the quantity of milk that the infant is receiving. The infant is weighed before and after nursing, and the difference in weight is the amount it receives at a nursing. We must remember, however, that a fluid ounce of milk weighs more than an ounce. The weight of milk increases as the specific gravity increases. The weight, for instance, of an ounce of milk of the specific gravity 1031 is 1.085 oz. When we recall that the capacity of the average infant's stomach at birth is a scant ounce; at four weeks, 2.35 ounces; at six months, 5.71, etc., we see an additional reason for wanting to know the amount taken at each feeding. The average infant is sufficiently intelligent to know when it has enough. The problem is usually not to reduce the quantity but to increase it.

Quality.—The constituents of mothers' milk that vary materially and interfere with the nourishment of the infant are the fats and the proteids; the sugar and salts remain very constant.

We will now consider the methods of modifying milk that has been found to disagree with the infant.

Intervals of Nursing.—Rotch and many other observers have reported that the shorter the intervals between nursings, the higher the specific gravity of the milk. When the intervals are lengthened the specific gravity is reduced. Simply by changing the intervals of nursing we are often able to make an infant thrive upon a milk upon which it was doing very badly before. We usually find that the intervals of nursing are very irregular and too close together unless the mother has been carefully instructed beforehand. Most of the infants that are doing poorly are getting milk that is too much concentrated. Case No. one illustrates the effect of shortening the intervals of feeding. The infant here had icterus and was not gaining in weight until the mother's milk was modified.

General Exercise.—The care of the infant weighs so heavily upon most mothers that they do not take enough exercise. This lack tends to increase the proteids. One of the most prompt and efficient methods of reducing proteids is to make the mother take out-door exercise. If that is not possible, then carefully directed gymnastics at home may be resorted to. The most useful sort of in-door exercise to the mother are those movements that tend to strengthen the abdominal muscles, which have been stretched during pregnancy and labor.

Massage.—General massage, just as exercise, reduces the proteids. Massage of the breasts tends to increase the flow of milk. Besides, it is a very useful aid in opening up the milk ducts that have been closed with detritus and epithelium or where the overdistended acini will not expel the milk into the ducts.

Nervous Condition and Anxiety.—These are the most difficult to handle, and they have the most influence upon the character of the milk. Case No. two illustrates the influence of a nervous mother and one anxious because she could not nurse her baby. I tried special diet, massage, gymnastics exercises, shortening the nursing intervals, but none of these brought the milk into the condition where the infant was thriving. There were reasons why I thought it best to keep her in the house. I assured her that as soon as she got out-door exercise her milk would be perfect. I told her that she could nurse her baby. By constantly making the suggestions, I gained her confidence; and, sure enough, her milk improved and the fat increased as soon as she began to take out-door exercise. Her baby is now a fine, big girl, and it nursed the mother all the time until it was put upon solid food.

Food and Drink.—Probably the best stimulant for the whole lacteal secretion is proteid food. The nitrogenous foods seem to stimulate more particularly the production of fats.

According to Hall, proteids furnish the material necessary (a) for the rebuilding of cell protoplasm; (b) for the direct proteid katabolism. (c) for the deposit of reserve fats. Probably the reason why the proteids stimulate production of fats in milk is because the epithelium of the lacteal glands are specialized as to fat production. Decrease in proteids intake reduces the fat. Case No. three illustrates the increase in fats, the proteids remaining about the same upon a diet rich in proteids. Cases Nos. four and five illustrate reduction of fats in milk by cutting out the proteids from the diet. Both of these were cases of fatty diarrhea which improved when the fats were reduced. Increase in fluids increases the milk; decrease in fluids increases the specific gravity.

The Infant's Suction.—This or some other irritant seems necessary to the production of a uniform and regular flow of milk. It does not alter the character except when the nursings are irregular—too often or too great an interval intervenes.

Drugs.—The only drug that I have ever found to act as a galactogogue, except those that in a general way improve the whole body, like tonics, is muriate of pilocarpine. I give in water one-eight to one-half grain at night, when I have tried other means to increase the flow of milk without success.

	Case I		Case II				
Date	7–22–10	8–1–10	5–25–09	6–4–09	6–15–09	8–25–09	11–22–09
Age of Baby	15 days	25 days	22 days	32 days	43 days	114 days	203 days
Reaction	Alkaline	Alkaline	Alkaline	Alkaline	Alkaline	Alkaline	Alkaline
Sp. Gravity	1028	1030	1032	1033	1029	1029	1032
Fats	1.	3.	1.	2.	1.50	4.50	5.
Proteids	1.57	3.55	3.75	4.15	3.07	3.55	4.4
Sugar	4.35	4.35	4.35	4.35	4.35	4.35	4.35
Salts	.20	.20	.20	.20	.20	.20	.20
Total Slids	7.22	11.10	9.30	10.70	9.12	12.60	13.95

	Case III		Case IV		Case V	
Date	6–15–10	7–22–10	11–29–07	12–16–07	10–15–06	10–29–06
Age of Baby	29 days	66 days	30 days	47 days	122 days	136 days
Reaction	Alkaline	Alkaline	Alkaline	Alkaline	Alkaline	Alkaline
Sp. Gravity	1034	1032	1036	1035	1032	1030
Fats	2.2	5.	3.6	1.6	4.	2.90
Proteids	4.46	4.35	5.20	4.6	4.25	3.56
Sugars	4.35	4.35	4.35	4.35	4.35	4.35
Salts	.20	.20	.20	.20	.20	.20
Total Solids	11.21	13.90	13.35	10.75	10.80	11.01

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CONVERSIVE AND ADAPTIVE INFANT FEEDING.*

BY
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Volumes have been written on the question of how to feed the nursling and while great and satisfactory progress has been made, the end is not yet; and how to successfully feed the infant is often still a great problem.

This is not to any great extent due to lack of knowledge in regard to the foods which we should use and do use in infant feeding; but is largely due to the personal equation done up in the mite of humanity we are called upon to properly nourish.

No matter what it is composed of or how made, no one food will suit every infant and no one method of infant feeding will suit all cases: Notwithstanding the enthusiasts who extol this or that special formula or food mixture and notwithstanding the detail men with their food filled bags, their wonderful tales and their test tube experiments. For a baby's stomach is surely different from a test tube and what occurs in the test tube very often does not take place at all in the stomach.

The excellent infant feeder is the physician who is quick to make any number of changes which may be necessary, in the food, until he strikes one which suits the conversive and adaptive capacity of the individual case in hand.

The best infant feeder is he, who, while knowing the science of infant feeding well, can best adapt his art of infant feeding to suit the powers of conversive adaptation and digestion in the case before him.

The excellent infant patient is the one whose digestive powers and whose conversive and adaptive powers are large. While the majority of infants possess these powers to a marked degree, others are woefully deficient; which largely accounts for the difficulties we have to meet in feeding them.

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*Read before the Pediatric Section of the Medical Society of the County of Kings, on Wednesday evening, December 28, 1910.

Not only do variations occur in the quantitative chemical content of all milks; but variations also occur in all infants, in their powers of digestion, conversion and adaptation; and it is fortunate that this is so; and it is largely because this is so that increase in power and strength and growth accrues to the nursling.

These facts should be kept constantly in mind, for they allow the physician more freedom in feeding and a larger food range in both the quantity and the quality of the food to be given, not only without harm resulting; but with positive benefit; for this is the way the stomach grows in size and digestive power.

This is proven by the considerable changes, which take place in the milk of the nursing mother from day to day, without interfering in the least with the well being of the nursling. And also by the fact that a perfectly healthy infant will naturally have the above mentioned powers well developed, and will therefore be able to take care of a milk whose protein and fat content is high and variable, without any ill effects whatsoever occurring. Many of these babies are able to digest whole cow's milk quite early; in many instances even as early as the fourth month.

A great many examinations of mothers' milk have been made from time to time; by various authors, with which you are of course, all familiar; to determine the protein and fat content particularly. And you will remember that great variations in these have always been shown, even in milk from the same breasts. So that no exact standard is possible, and so, we should accept a variable one, to the end that our views on infant feeding may be broadened, so that we will not fear to give the infant a food whose chemical content may vary somewhat from day to day, to be taken into a rapidly growing stomach, whose powers of digestion and adaptation are constantly changing also.

Too often, at present, we accept an arbitrary average standard on these matters to the narrowing of our views. We should bear in mind that this variability in the content of milks is a great help to the growth of these powers in nurslings. Indeed is absolutely needful to the growth of their digestive powers and therefore, a positive benefit accrues; for if kept upon a food of unvarying character, the infant would never be able to digest anything stronger.

I remember hearing Austen Flint, 25 years ago, relate a case that illustrates this perfectly. He had a patient on an exclusive milk diet for over a year for the cure of a gastric catarrh. The patient, an adult, while traveling in Europe met some American friends in Florence, who invited him to dinner. He went and after eating a portion of the first course, he was seized with nausea, had to excuse himself and rush from the room, when he promptly vomited the unusual food, which he had taken. Frightened, he hurried home and hastened to Dr. Flint, who reassured him and by adding to his diet first one article of food and then another, and so on, gradually recovered for him the power to care for foods of varying digestibility.

Not only is variation in the chemical content of the infant's food a good thing; but variation in consistency and quantity also is often positively beneficial.

How may we best develop, conserve and increase these powers of conversion, adaptation and digestion, and how use them in our cases of difficult infant feeding? Of course, the infant's physical condition is the most important factor. If the baby is well and strong and cannot digest its food, we have but to rest the digestive organs and all will soon be well again.

If the infant be breast fed and healthy; and is taken from the breast for good cause, we must study the individual needs of the case and suit the food to them and all will be well.

If the case is one that our German friends would call a weakling and if it be ill of some chronic gastroenteric disease, or an infant ill with some other acute or chronic ailment, the proposition is a far more serious one; for in these cases the adaptive and conversive abilities are very small or entirely absent.

How shall we go about it, to increase or recover these important powers? Well, you are all familiar with the necessary measures and use them every day. By rest, by lavage, by gavage, by irrigation, by rectal feeding, by varying the frequency of the oral feedings; by diminishing the amount of the food given at one time and increasing the amount at another; by varying the strength of the food; by studying the needs and powers of the individual case, especially varying the food until we strike one which suits the patient in every way. Also by the use of plenty of fresh air and sunshine and sometimes a little medicine.

When we do any or all of these things, we are attempting, by all means in our power to rest the gastro-intestinal tract and at the same time have our little patient as nearly nourished as possible. I am convinced that stomach washing is not used anywhere near as frequently as it should be; for it has the happiest effect in many cases, in increasing the appetite and the digestive powers mightilly.

Irrigation also is of great value, helping to clear out the canal and fill the blood vessels and paving the way for rectal feeding. Rest of the infants' stomach, complete for a time, then partial for a longer or shorter period. is generally followed by a marked increase in the adaptive and digestive ability.

During the period of absolute rest nothing should be given by the mouth except sterile water, and the infant should be partially nourished by the use of nutrient enemas; two to four being given in the twenty-four hours.

After twenty-four to seventy-two hours of this, egg water may be given for twenty-four to forty-eight hours. If this is taken care of, whey may be given next, one ounce every hour, if the child is awake. If this is well borne, it may be increased to three or four ounces every two hours and if all goes well, a portion of a new food mixture should be given next. In the majority of cases, rest alone will not do; but a gradual upbuilding of the digestive powers must be undertaken. This is best accomplished by a gradual increase in the use of those elements which go to the upbuilding of the child nutritionally. This is good scientific feeding. As to the kind of food to be given to successfully feed the infant the physician must command a broad range.

Still studying the individual needs as evinced by the character of the stools and the stomach washings, by the weight and by the objective and subjective symptoms, if any, which may be present, we may find it necessary in some cases to feed the infant every hour or every two hours for a while.

The food in these cases should be given at first, just as weak as will as nearly as possible hold the weight of the infant; or cause the least possible loss of weight, or increase the weight a little; and still the food should be just as strong as can be taken care of by the digestive apparatus. To accomplish these ends, requires continual changes in the food in some cases.

As the infant's powers of digestion increase, the strength and character of the food may be changed in order that the least nutritional harm may be done. While we are making these efforts to suit the food to the infant, this increase in the conversive and adaptive powers of the stomach helps us out wonderfully and sometimes accounts for the brilliant results obtained.

Having ascertained the kinds of food which have been used in a case, we should make a complete change, not only in the food, but in the method of preparing, giving and timing the meals. Thus we may change from a strong food to a weak or from a weak food to a stronger, or from a farinaceous food to modified cow's milk mixture or vice versa, or make a three hour baby a two hour, or the opposite.

The only way to find out what food is going to succeed in any case is to try different foods out on the case, until one is found that the child will take readily and that is digested; as evinced by the absence of symptoms and by the examination of the stools. An increase of weight will also be observed after a time.

The mind of the physician should be open. He should be broad in the matter of what food may be used. He should feel that results alone should count and be willing that the infant should take any food, under his guidance, which is found to agree, no matter how unscientific or unorthodox it may be. For he can later add what is lacking and essential to the babies' nutrition and gradually revert to a proper food altogether.

We must endeavor to command a broad range of foods and food mixtures, for what is one baby's meat is another baby's poison, in the sense that what will agree perfectly with one dozen infants will totally disagree with a second dozen. And aside from its use as a food, what one child will take with avidity, another will show the most utter distaste for; even to the extent of nausea and emesis, or complete refusal of the food. These likes and dislikes of the infantile palate must be taken into account, if one would succeed largely in this difficult branch of the healing art.

If we bear in mind that our little patient will lack proper nourishment if deprived of certain substances in whole or in part for a long period of time, we can let the baby's palate choose the food that pleases it; because what the food may lack, may soon be added.

There is no risk in trying different foods; but all should be given in great dilution and made stronger if found to agree.

No strict rule as to quantity holds when we are using a very weak food. A larger quantity than usual must be given.

Modified cow's milk is by all odds the best substitute for mother's milk and it is capable of an infinite variety of modification but it certainly fails utterly in some cases and for a time has to be abondoned.

It is very important to bear in mind that while this or that commercial food appears to be agreeing perfectly, the infant must not be allowed to stay too long upon it; but must be gradually changed back to a proper modification of cow's milk. Fresh cow's milk should be used, the best and cleanest supply of milk possible to obtain. Certified should be used of course if it can be obtained. If a food is not agreeing it should be changed in forty-eight hours. It is only a waste of precious time to delay. If it is agreeing, it may be noticed that the baby is happy, contented and quiet; that the stools are normal or greatly improved and the weight increases after a few days.

So, within reason, the food that the infant likes and thrives upon without symptoms is the proper food for it, at least temporarily. This food must eventually contain those well ascertained elements, upon the knowledge of which is based the scientific feeding of today. However, one need not feel bound down to a slavish following of the teachings of the present, no matter how apparently well proven they seem to be; for great progress is being made in these matters, and the truths of today and the best things of today are sometimes quite different next year.

So, taking the excellent system of today as a basis, the physician feeder must alter, add to and vary the infant's food to suit the case before him.

And this is the crux of the whole matter, and it seems to me that progress in the future will be largely, perhaps along this line of individualizing each case. Studying its ills, its needs, its likes and dislikes, its capacity, or lack of capacity, and its physicial condition and environment.

A word as to the use of this or that commercial food in infant feeding. We all know perfectly well that they fall woefully short of being ideal foods from a scientific standpoint. Every other objection aside, the one fact that they generally lack freshness or the anti-scorbutic element condemns them for long use.

Still, if we bear their shortcomings in mind, we can use them for limited periods, with benefit in certain cases, always remembering what rest, plus a food that is liked, and a food that is digested, will do in increasing the powers of assimilation and thus prepare the infant for a fresher and better food.

Also remembering that because an infant cannot digest a food at one time, it does not hold by any manner of means that it cannot digest the same food later on.

402 Washington Ave.

SOCIETY TRANSACTIONS

THE MILK SUPPLY OF NEW YORK CITY.*

On the evening of November 28th. Dr. Ernest Lederle, Health Commissioner of New York City gave an interesting address at Columbia University on the City Milk Supply. There need be no excuse for publishing an address of this nature in a journal devoted to diseases of children, as the health of infants is to a large extent bound up in an uncontaminated Milk Supply. The address of Dr. Lederle was profulsely illustrated by scenes on the screen depicting sanitary and unsanitary conditions under which milk is gathered and delivered for use in our city. In fact, these pictures exhibited on the screen the progress of the milk from farm to the consumer. A regular and systematic inspection of the production, transportation, handling and distribution of milk as now in vogue in New York City and State. More than two million quarts come daily to New York City, from approximately eight states, New York, New Jersey, Pennsylvania, Vermont, Massachusetts, Connecticut, Maryland and Ohio. The milk is collected and shipped by about 1,000 creameries, situated upon branches of the several railroad systems and boat lines that have terminals in the City of New York. Milk is conveyed by rail to New York in some instances from a distance of more than 500 miles. The daries which supply the City number 44,000. The stores in which milk is sold 1200. The receiving points are 15. Wagons from which milk is sold, 5,500 and milk depots 75.

The present inspecting force is as follows: Inspectors of foods. City counting at $1800 a year. Country at $1500 a year. City and country five at $1350 a year; City 21 and country 25 at $1200 a year; Medical inspector, city one at $1200 a year.

Work performed from January 1st to August 27th, 1910, city inspections. Stores 74,178; wagons, 11,429; receiving stations, 696; sample of milk taken for chemical analysis, 7987 and for bacterial analysis, 3264. Prosecutions for violation of laws, 531. Fines collected, $5,373. Quarts of milk destroyed 11,591 1-2. Permits issued: Store, 2,338, wagon, 5,244.

Country inspections, dairy 39,471. Shipping station, 1872. Samples of milk taken for chemical analysis, 1616; for bacterial analysis, 312. Samples of water taken for chemical analysis, 139; for bacterial analysis, 82. As Dr. Lederle pointed out milk is a potent means of conveying infection, as well as being the chief cause of infantile diarrhea which kills more infants than any one disease.

Improvements have taken place in the dairies, the cow barns, as a rule, are better ventilated. Where inspections and re-inspections after notification have shown notably unsanitary conditions, the companies purchasing milk from such sources were informed that the milk was not wholesome, and should not be accepted for shipment and sale in the city.

However, although considerable progress has been made in insuring a fairly pure milk supply for New York City much, yet remains to be done. The inspection is inadequate the force of inspectors only being sufficient to allow of country dairies to be inspected but once during the year.

The following are the grades of milk retailed in New York selected milk, the mimimum requirements for which are as follows: (1) Only such cows shall be admitted to the herd as are free from all diseases of the udder, and from clinically manifest tuberculosis. (2) That all cows be examined clinically each year by a veterinarian of the Department of Health, all cows with any disease of the udder or with clinically manifest tuberculosis to be excluded from the herd and farm. It shall be unlawful to sell or use milk from such cows for food purposes. (3) That the milk shall never contain more than 60,000 germs per C. C. in winter nor more than 100,000 germs per C. C. in summer. (4) That such milk be delivered to the consumer only in sealed bottles, which shall have been filled at the dairy or creamery and shall be labeled with the date of the earliest milking whose milk formed part of the contents of the bottle. (5) That such milk be delivered to the consumer within thirty-six hours after milking.

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*Address on the Milk Supply of New York City, by Ernest Lederle, Health Commissioner of New York City.

Guaranteed milk, the minimum requirements for which are as follows: (1) That only such cows be admitted to the herd as have not reacted to a diagnostic infection of tuberculin. (2) That all cows be tested annually with tuberculin and all reacting animals be excluded from the herd. (3) That the milk shall not contain more than 30,000 germs per C. C. when delivered to the consumer. (4) That the milk be delivered to the consumer only in sealed bottles which shall have been filled at the dairy, and shall bear a label giving the name of the dairy, and the date of the earliest milking at which the milk forming part of the contents be delivered was drawn. (5) That such milk be delivered to the consumer within thirty-six hours.

Certified milk is milk certified by the Milk Commission appointed by the Medical Society of the County of New York or the Medical Society of the County of Kings as being produced under the supervision and in conformity with the requirements of that Commission as laid down for certified milk which are practically the same as those for guaranteed milk. The guaranteed and certified milk sold in New York amounts to but one per cent. of the total. The price about 25 cents a quart being almost prohibitive except in the quite well-to-do. Inspected milk is milk produced under the supervision of a milk commission appointed by the Medical Society of the County of New York or by the Medical Society of the County of Kings, or under certificates for "Inspected Milk" issued by said Commission. No milk, however, shall be held, kept, offered for, or sold and delivered as inspected milk in the City of New York which is produced under requirements less than these of the said Board for Selected Milk. Skimmed milk, which is milk containing less than three per cent. butter fat. Condensed skimmed milk which is milk from which any part of the water has been removed, or milk from which any part of the water has been removed and to which sugar has been added. Of course, when on the milk question Dr. Lederle referred to pasteurized milk and Dr. Nathan Strauss' work in connection with infant depots and pasteurized milk. He said that a comparatively small sum about $40,000 had been voted by the City of New York towards the establishment of infant depots but that he was glad to say that Mr. Strauss had consented to continue the depots. Dr. Lederle seemed to be of the general opinion that pasteurization is a valuable alternative measure, that good, pure raw milk is the best, but that until such milk can be obtained it is better to pasteurize than to use contaminated milk. But pasteurized milk must be submitted to this method carefully. The rules and regulations relating to pasteurization of milk adopted by the New York City Board of Health on December 8th, 1909 were as follows: (1) Only such milk or cream shall be regarded as pasteurized as has been subjected to a process in which the temperature and exposure conform to one of the following: 158 degrees Fr. for three minutes, 155 degrees Fr. for five minutes, 152 degrees Fr. for ten minutes, 148 degrees Fr. for fifteen minutes, 145 degrees Fr. for eighteen minutes and 140 degrees for twenty minutes. The last heating is considered the most reliable form of pasteurization. The milk, after pasteurization must be at once cooled and placed in sterilized containers and the containers sealed. All pasteurized milk must be delivered to the consumer in sealed containers, which are plainly labeled "pasteurized." The labels also must bear the date and hour when the pasteurization of the milk was completed, the degree of heat employed, the length of time exposed to the heat, and the number of the pasteurization permit issued by the Board of Health. Pasteurized milk must be delivered to the consumer within twenty-four hours of the pasteurization. No milk shall be pasteurized a second time.

Dr. Lederle touched upon the importance of properly caring for the milk when in the house. In many, if not most tenement houses no care is taken to preserve milk and a great deal of milk contamination proceeds from domestic sources. Another fruitful cause of polluted milk is the small provision stores at which a very considerable portion of the New York milk is retailed. These stores sell all kinds of provisions, are often stuffy and even dirty and indeed little care is taken to prevent contamination. Useful hints were given in the direction of domestic and small provision stores on the preservation of milk. Comment was made on the care of milk during transportation and the exterior and interior of a modern railway milk can were shown. The necessity for keeping the milk cool especially in hot weather was dwelt upon and it was pointed out that to this lack of care is due the infantile diarrheal affections which take such a heavy toll of infant life in all large cities.

Dr. Lederle made many points which are not set down here, but the gist of his valuable address is given. Addresses such as these are of the greatest use and serve to drive home the argument that relationship between infantile affections and milk is very intimate and that the best way to keep down mortality among young children is to ensure as pure a milk supply as is possible.

RETROSPECT OF CURRENT PEDIATRIC LITERATURE.

Diseases of the Nervous System in Children.

Under the Charge of

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Chorea Mollis —The paretic conditions incident to acute chorea have not received in our text-books the attention merited by their comparatively frequent occurrence, and even in the general literature the subject does not appear to have induced much study. Every once in a while in a series of choreic cases, one is met with in which the cause of the patient being brought to us for treatment is not because he cannot keep still or because he twitches this or that extremity, but because this or that extremity is moved so little that it is considered to be paralyzed; and in fact when we observe the patient we find often that the parent's statement is not far short of the truth, and that the chil dwill perform certain acts in a most round about and awkward manner, with the wrong extremity, rather than move the proper, but affected, limb. There is, in other words, really a paretic condition of the part. It is usually relative although it may be extremely marked and occasionally complete. It is a true functional paralysis. That it is purely functional is shown by the absence of all those objective phenomena peculiar to organic paralysis, such as muscular spasm, exaggerated reflexes, true muscular wasting, and alteration in the electrical reactions. One phenomena peculiar to organic palsies is, however, said to be sometimes present in this functional paralysis and this is the loss of the reflexes. This, if so, is difficult to explain.

It is not difficult to conceive of heightened reflex activity in functional disorders, but it is impossible, in the light of our present knowledge, to explain why reflex activity should be lost in such functional disturbance, and especially in chorea mollis. This paretic condition in chorea is characterized by a pronounced loss of muscle tonus, and a limb so affected is relaxed and its muscles flabby, which may at first glance give rise to an impression that the limb as a whole is wasted, but this is apparent only and not real, for no true muscular atrophy occurs. This loss of muscle tonus, to a much less marked degree, is seen, in the ordinary cases of myoclonic chorea, in a certain percentage of instances, in an increase in the degree of passive hyperextension of the extremities.

This paretic condition is usually seen in a single extremity, more commonly an arm, rarely involving more than one extremity and then usually is hemiplegic in distribution. Involvement of all four extremities is extremely rare, and I have yet to meet with such an instance. A most interesting case is, however, reported by Sergent and Besset (1) in a boy of twelve years in whom the entire body was involved. While the predominent feature of the clinical picture of paretic chorea, is paralysis, nevertheless they are not quite free from movement of an involuntary inco-ordinate character, if kept constantly under observation. At times there will be noticed occasional slight movements in the fingers of the paralyzed arm, or in the face or body.

These cases practically all commence with choreic movement which may at first be very pronounced gradually lessening as the helplessness of the part increases. In those instances in which it has previously been only slight it may be overlooked by the parents, or minimized in the light of the more impressive paralysis of the later period, so that the impression is conveyed that the paretic state originated de novo.

It is hardly possible to long mistake such a condition for any other disease, for there are lacking the aggregation of objective signs of organic disease. I am sometimes inclined to believe that in most of the instances where the reflexes are thought to be absent, they might be elicited by reinforcement.

They should certainly never be declared absent unless Jendrassik's device is employed. In the case reported by Sergent and Besset all the reflexes are said to have been absent at the elbows and wrists, knees and ankles. As the paralysis was general in this child reinforcement was of course impossible, but I am inclined to believe that they could have been obtained if they had been tested just after the child had awakened from sleep. Personally, I have never seen an instance where the reflexes were actually absent.

As already stated no true muscular atrophy is ever present, and even the muscular tonus while greatly impaired is never wholly lost. The reaction of degeneration is of course never seen. Considerably more difficult sometimes is the differentiation between this condition and a hysterical paralysis of a limb. Most of the functional palsies of hysterical nature are associated with pain, and passive movement of the extremity is, to a greater or less extent, limited either by this pain, or by muscular spasm.

The paralysis is also greatly influenced by emotional excitement and by suggestion of incidents in the environment.

This is never the case in chorea mollis. The absence of hysterical stigmata is of no value whatever in the exclusion of hysteria in childhood. They are usually absent.

The case of the affection we are considering, reported by Sergent and Besset is remarkable both on account of the extent of the paretic condition, and in view of the therapeutic results.

The child was an eleven year old boy, admitted to the Hospital of Saint Louis, in May, with a history of the onset six weeks previously of typical myoclonic chorea. In three weeks, however, the child became so weak that it was bedridden and three weeks later, when admitted, was found completely helpless, unable to voluntarily raise the limbs or body, with expressionless countenance, almost inarticulate speech, and mental apathy.

In face and fingers quick irregular twitches occasionally occurred. The deep reflexes are said to have been totally abolished. The abdominal and cremasters greatly diminished. The bowels and bladder incontinent. Pulse irregular. Heart otherwise negative. Urine negative. There was a history of exactly similar attack one year previously.

On account of the existence of what the authors term "the suprarenal white line," the nature of which they do not in this paper explain, the child was given suprerenal gland. He was better on the fourth day, very much better on the seventh day, and on the thirteenth day the reflexes commenced to reappear, and with help the child was able to take a few steps, and on the seventeenth day after the institution of the suprarenal treatment he was able to walk alone and the gland was ommitted. Eight days later he was practically well.

The author believes that the pseudo-paralytic state was caused by an insufficiency of the suprarenal gland, as proven, they consider, by their treatment.

They believe that other similar instances are also so produced, and, while they believe this child was especially susceptible to defective suprarenal function, they believe that chorea, itself may bring on a relative insufficiency, by virtue of the production of an excessive amount of poison, the result of excessive muscle katabolism. A pre-existing deficiency is, in other words, not necessary.

They point to the extreme muscle activity of chorea, and hint at an overwhelming of the system with the muscle-poison (if we may use the term), which the suprarenal gland must destroy if it is able.

To the very pertinent and just objection that many of the cases of chorea mollis are not preceded by violent or prolonged muscular activity (and I wish to add personally that the majority of them are not), they reply that such instances "are for the most part localized palsies, mono-, hemi-, or paraplegias; capable of another interpretation." This appears to most readers as making a fine and purely arbitrary distinction to prove a theory. In the report of this case they have raised an interesting subject for careful investigation, but the attempt to generalize a series of deductions from a single case is manifestly illogical.

Diseases of the Skin and Uro-Genital System.

Under the Charge of

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Serum Diagnosis of Syphilis.—By L. S. Schmitt, M. D., San Francisco, (*California State Journal of Medicine*, Jan., 1911). In an elaborate article on serum diagnosis of syphilis the author in commenting on all new serum tests as Wassermann, Neisser, Bruck, Noguchi, Tschernogubon, Bauer, Hecht, Margareth Stern, gives the preference to the Wassermann-Neisser-Bruck and the Noguchi systems. The others aforementioned are all open to the same criticism, viz: that the amounts of amboceptor, compliment and antigen are not known.

After discussing their diagnostic value, he touches the question of treatment shortly. He considers mercury as the most valuable remedial agent for syphilis, while iodide of potash, arsenic and other alteratives are mere adjuncts in his opinion.

He arrives at the following summary:

1. The Wassermann and Noguchi methods are the most reliable of all reported by reason of the fact, that the quantity of each reagent can be easily determined.
2. The precipitate tests are not as reliable as the complement fixation reaction.
3. The value of the complement fixation reaction as in the diagnosis of syphilis per se and as an etiological factor has passed the stage of experimentation.
4. The reaction is of service as an index to the efficiency of treatment.
5. The results of the test have proved that mercury is the main drug to be relied on during treatment of acute syphilis. (I often had occasion to resort to arsenic, where mercury was not well borne. Has author tried the efficiency of dioxyd-diamidoarsenobenzol (606) in changing the Wassermann from positive to negative?)

The Increasing Frequency of Inherited Syphilis and the Grave Importance of Its Early Recognition in Infants and Young Children From the Standpoint of the Ophthalmologist.—Dr. Charles Stedmann Bull, (*New York Medical Record*, Jan. 7, 1911). In this most interesting paper of Dr. Bull, many stigmata are described which are of diagnostic value in suspected heredo syphilis. They should be looked for in all such cases. In young children, where we cannot expect any assistance from the dental system, we must more or less rely on ocular and aural stigmata.

Pain, inflammation of or discharge from ears, acute or chronic, are first to be considered. Functional disturbances of the auditory apparatus should be looked for by testing the hearing power. The so-called, surdite foudryrante is undoubtedly due to syphilis. This is characterized by suddenness of invasion, rapid course and intensity, ending in a total loss of hearing within a few days or hours without visible clinical evidences. Such a sudden attack in a child, apparently normal before is always pathognomic of syphilis. The natural results of such an attack are certain defects of speech or even mutism.

The ocular or aural stigmata are often accompanied by such of the face especially on the forehead or nose.

They consist in a flattening and broadening at the base of the nose just beneath the frontal spine, or the so-called, snub-nose on that the bridge of the nose assumes a concave or re-entering curve. Cranial stigmata he mentions as well known.

In the teeth of first dentition we are able to find some valuable signs. Microdontism, in which some of the teeth are very small, while others are of normal size, a condition prevailing almost entirely in the upper and lower incisors. Also the persistence of these teeth beyond the usual period is also quoted by Fournier as an important stigma.

Four therapeutical deductions which Fournier has drawn from his immense clinical experience seem to me of enough value to the pediatrist to be repeated here.

1. Specific treatment is indicated in all cases in which the patients are actually affected by lesions or symptoms which might be due to syphilis and who show at least one of the stigmata mentioned.

2. If a patient shows one or more of the stigmata mentioned, he should be subjected to specific treatment as a prophylactic measure, if there be no a tual lesions present.

3. In a recognized syphilitic family if a child has recently been born who presents one or more of the stigmata the parents should be submitted to prolonged specific treatment in order to prevent, if possible, the transmission of the taint to any future births.

4. In case a woman becomes pregnant in a family in which the children previously born show some of the stigmata above mentioned, she is to be subjected to rigid specific treatment during her entire pregnancy.

To these propositions laid down by Fournier the author would add a fifth one based upon his own experience during the last 25 years.

5. A patient who has contracted the disease and has presented undoubted evidences of constitutional syphilis should be rendered sterile in order to save the innocent and to prevent the degeneracy of the race.

Paget's Disease of The Nipple.—Dr. Hirschel, (*Munschener Mediziniche Wochenschrift*, Dec. 13, 1910). Two cases are reported and the author arrives at the conclusion, that in every eczematous affection of the nipple and the areola, great caution as to diagnosis should be used. If there is reason for any doubt, a biopsy should be made and if any cancerous nodules be found, the entire removal should be resorted to, which secures a good prospect of a radical cure. The author would have cases like this called cases of cancerous eczema instead of using the name Paget's disease. Paget took an eczematous soil for the cause of the developing cancer while our teaching now shows, that there is first a cancer and then an eczema developed later.

Skin Eruptions Complicating a Case of Anterior Poliomyelitis.—Dr. Albert L. Stubbs, Ja Junta, Cal., (*American Journal of Dermatology and Genito-Urinary Diseases*. St. Louis, U. S. A., Dec., 1910). In the Journal of the American Med. Association of Sept. 17th, the author published a very interesting article on a case of anterior poliomyelitis. As the skin symptoms connected with this malady are few, Dr. Stubbs gives them in a brief extract in the American Journal of Dermatology. They are of great interest to the pediatrist as well as the dermatologist.

Earl S., age seven, came under his care July 25, 1910. He had been well until the day before, when he showed symptoms of gastro-intestinal disturbance. Having had trouble similar to his present illness, his parents, who were on an automobile tour from Lyons, Kansas, to Colorado Springs, Colorado, thought it to be one of his old attacks, and after giving him a physic, thought it would be all right next day. They drove 20 miles with him after he was taken sick. Author saw him at nine A. M., the second day of his illness.

He complained bitterly of pain in his left leg, and had a temperature of 102 degrees. His parents had made a diagnosis of rheumatism and at first sight the author was inclined to agree with them. He sent him to the hospital and gave him a careful examination three hours later.

There was entire disability to move the left leg, with some paralysis of the right. Having only recently had a case of anterior poliomyelitis, he (the author) was on the lookout for it and had no trouble in reaching the proper diagnosis. It was a severe case from the start. High temperature ranging from 104 to 101. He was surprised to note a rash on the second day, first in the arm-pits and groins, then extending all over the body. It was red and of an erythematous nature and for a day I was not sure, that it was not scarlet fever. The rash became intense and amounted at two separate intervals to a cyanosis. Meningeal symptoms developed and he thought that death was very near, but he finally (the patient) rallied and while the rash remained for about ten days, the alarming symptoms gradually ceased and he progressed nicely, to a nearly normal condition, excepting the paralysis. The right leg was nearly normal when he left for home at the end of three weeks, but the left leg was still almost completely paralyzed. He had great pain in the left leg, at intervals, but was practically free from it when he left the hospital. There was quite extensive desquamation and during the whole time of the eruption itching to a moderate degree was present. After the rash had disappeared he had two attacks of urticaria lasting 24 hours each.

Dr. Stubbs thinks this case worthy of record, as but comparatively little of skin complications can be found with this trouble. In a recent report of this disease from Massachusetts, the Journal A. M. A. gives seven per cent. of the cases observed, as having skin trouble, but does not describe any of the cases and the author is therefore unable to give an idea of the character of any skin trouble except in his own case.

Infectious Diseases

Under the Charge of

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The Diagnosis of Tuberculosis of the Bronchical Glands.—Dr. Henry Farnum calls attention, (*The American Journal of Medical Sciences*, Jan., 1911), to the importance of diagnosing tuberculosis of the bronchial glands in view of the fact that pulmonary tuberculosis is almost always secondary to tuberculosis of the bronchial glands.

The glands of the bifurcation of the trachea are usually the first to be diseased. The bacilli may remain for a time in a dormant or so-called lymphoid state. The onset is usually insiduous. The symptoms are in part due to the absorption of the taxius of the tubercle bacilli, and also to the pressure of the glands upon the vascular bronchial and nervous tissue.

Some authors speak of substernal pain or pain in the mammary region. Stick has called attention to the expiratory stridor of infants with enlarged bronchial glands. This resembles the expiratory effort of asthma, but differs in that it is more often constant than paroxysmal. This sign, which is rarely present after the fourth year is usually preceeded by a few weeks of coughing commonly diagnosed as bronchitis. When the child is resting quietly one observes that the stridor occupies the whole of expiration. These severe forms have been mistaken for laryngeal cramp and intubation has been performed. The mistake can be avoided if one remembers that the voice is lost in diphtheria, but not in bronchial gland enlargement.

The typical cough is paroxysmal "brassy" and quite characteristic. It may suggest pertussis. It is of reflex origin. A beautiful set of X-ray pictures accompanying the articles, showing that the X-ray is the most important factor in diagnosing the presence of the glands. Dr. Farnum draws the following curious conclusions:

1. Tuberculosis of the bronchial glands often exists as a distinct clinical entity, capable of diagnosis.
2. While the diagnosis is more readily made in children, it can frequently be made in adults.
3. The presence of dilated veins over the anterior aspect of the chest,

spinalgia, interscapular or vertebral dulness, and vertebral bronchophony speak strongly for enlarged bronchial glands, the tuberculous nature of which is practically assured when in addition to the above the individual is underweight and has a paroxysmal cough and the symptoms of the tuberculosic toxemia.

4. The recognition of the disease, while it is still limited to the bronchial glands, is of the utmost importance, as we know the most salutary results of tuberculin therapy are obtained in glandular tuberculosis.

Anaphylaxis for Cow's Milk in Nurslings.—Barbier, (*Arch. de. Med. des Enf.*, July, 1910), says that when an infant takes breast milk he takes a homologous albumen, but when he takes cow's milk he ingests a peterologous albumen, which is in many cases poorly assimilated. This entering the blood may produce the same phenomena as the introduction of a foreign serum. If the pancreas and liver fail to transform the albumins the milk albumin passes to the blood, as has been proved clinically, and causes the usual reaction of anaphylaxis. This may explain the marked intolerance for cow's milk in many cases and is especially noted in convalescence from enteritis. Some infants cannot take cow's milk from birth and they have a congenital anaphylaxis for it. This is found in the weak, the premature, or in children of tubercular or syphalitic parents. Anaphylaxis may be acquired by children who have been over-fed by cow's milk and the intoxication is usually preceded by dyspeptic symptoms. As pointed out in the American Journal of Obstetrics and Diseases of Women and Children, Nov., 1910. Anaphylaxis explains the extreme difficulty of feeding premature infants on cow's milk.

Myatonia Congenita of Oppenheim.—Dr. J. Victor Haberman calls attention to Oppenheim's disease, and points out the fact that this disease has received little recognition in America although the first autopsy case was published by an American, Spiller of Philadelphia. Dr. Haberman reviews three cases in an interesting article published in The American Journal of Medical Sciences, March, 1910. Dr. Haberman has applied the name hypotonis or atonic pseudo paralysis.

In the report of the first case by Haberman the following condition was found: "The child was three and one-half years old. The mother brought the child to the clinic because it would not use its legs since birth. The upper extremities have always been normal. The child is, in regard to its intelligence, normally developed. Pregnancy and parturition were nowise complicated. Labor was not prolonged. There was no cyanosis at birth, nor any injury nor acute disease since. Examination shows complete hypotonicity of the lower extremities. Neither patellar nor achilles reflexes can be elicited. The child can flex the foot upon the leg but only with much reduced strength. The upper extremities, though they can be voluntarily moved in all directions, also show some weakness. Only if supported on both sides can the child propel itself forward, and this with much effort. Because of the childs' excitement, the electrical examination was not complete; but this much was ascertained, that the cruralis and obturator on the left side gave no reaction at all, while the peroneus showed decreased electric irritability.

The following symptoms have been fairly well established: There is a rather extensive apparently flaccid paralysis, with absence of potellar and Achilles reflexes. There may be vaso motor disturbance, slight atrophy or no atrophy. When there is atrophy it is marked by adiposis. These cases might be mistaken for poliomyelitis, but myatoria congenita dates from birth, and furthermore, there is really no degeneratine atrophy present with reactions of degeneration in Oppenheim's disease.

In 1900 Oppenheim described a condition of general or localized atomy of the muscles, concerning which he said that he had found nothing in the literature. These cases occurred within the first two years of childhood.

In all cases reported there was impairment of active motion. The limb in extreme cases appeared completely paralyzed, yet on careful observation occasional contractions in the various muscles could be noted, but not enough contraction to give locomotive effects. Less invalued cases showed only hypotony and a marked weakness. In one case the muscles of the trunk and neck were affected besides those of the limb so that the infant of eight months could neither sit up nor support its head. The muscles of the eyes, tongue and throat were unaffected, also the diaphragm was not affected. No abnormalities, so far as it is possible to judge in such infants were discoverable in the sphere of intelligence, sensory system or special senses. The malady appeared to be congenital. In its typical form it seems to be the author of Little's disease.

The pathology of the disease is obscure. Oppenheim thought the pathological factor of the disease was found not in the central nervous system but in the muscular system, which was probably retarded in its development. He pointed out, however, the possibility of the disease in the anterior floor cells prompting the developmental inhibition of the muscles.

BOOK REVIEW.

A Practical Treatise on Diseases in Children, by Eustace Smith, M. D. Fellow of the Royal College of Physicians; Physician to His Majesty, the King of the Belgians; Physician to the East London Children's Hospital; Consulting Physician to the Victoria Park Hospital for Diseases of the Chest. Third edition. Edinburgh and London, William Green and Sons, 1909.

It has been made necessary in this revision, in order to incorporate much new matter, which has been added to reduce somewhat the space formerly devoted to pathology and morbid anatomy, therefore, the author has very wisely determined in a work such as this, the usefulness of which lies so entirely in its clinical and therapeutical detail, not to occupy too much space in descriptions of the morbid character of diseased organs. However, all needful information upon such points can be readily obtained from the many excellent manuals devoted to these subjects. Therefore, only slight reference is made to the prevailing beliefs and conjectures that could not be entirely avoided and no more space has been devoted to these subjects than was thought to be essential to the clear understanding of the several diseases.

Large portions of this book have been entirely rewritten and rearranged; its clinical element has been everywhere elaborated and strengthened by additions and alterations; and much matter previously unnoticed has been introduced in this volume. Among other subjects is that of congenital laryngeal stridor, traumatic birth paralysis of the arms, tics and habit spasms, congenital pyloric stenosis, post-nasal vegetations, and adrenal hemorrhage, are all included for the first time in the present issue; but in every such addition and every alteration, the aim of the author has been to supply useful working knowledge, as has been of value in the daily life of the busy practitioner. Throughout the whole revision the author has kept this subject before his mind and has spared no pains to make the matter a trustworthy clinical guide to the diagnosis and treatment of diseases in infants and in children.

This book reflects the mature experience of a keen observer of the best and latest knowledge in pediatrics. It is reliable throughout and in every way well balanced, both as a text-book for the student and as a reference book for the general practitioner and it takes rank with the best thought in pediatry in any language or tongue not surpassed by any other treatise on the subject. The chapter dealing with infant feeding and nutritional disturbances reflects in a very conservative manner the recent advances in our knowledge of that subject. This volume is an example of all that is best in pediatric knowledge and should have a place on the shelves of all who would be abreast of the times and who would desire to do the very best possible for sick infants and children. It is both a duty and a pleasure to commend this most excellent work.

The Care and Training of Children, by Le Grand Kerr, M. D., of Brooklyn, Funk and Wagnalls Company, publishers, 12mo., cloth, 75 cents net; by mail, 82 cents.

The practising physician will find a mine of useful and interesting facts in Dr. Kerr's book. He has condensed the best of many years' experience and observation as a physician, together with the more intimate observations of many parents, who, under his appreciative eye, have made a study of the subject. He has not sought to elaborate a "system" of training, and imprint thereon his own theories, but has rather reflected in a series of delightful monographs, the matured experience of the many. There is scarcely a feature of child training, hygienic, physical, mental, moral, that is not considered; and when one has read the various chapters there seems to be nothing more that could be said to cover the problem.

Principles of Public Health. A simple text-book on hygiene presenting the principles fundamental to the conservation of individual and community health, by Thos. D. Tuttle, B. S., M. D. Secretary and Executive Officer of the State Board of Health of Montana. Yonkers-on-Hudson, New York, World Book Company, 1910.

The author of Principles of Public Health has here set forth the general rules of life by the observance of which every adult and every child not only can do much to preserve his own health, but can also prove himself a prominent factor in raising the standard of public health. A campaign of education is demanded to arrest an enormous loss of life which is carrying so many to untimely graves, and the instruction given in this volume will be of inestimable value in teaching people how to avoid avoidable diseases.

Primer of Hygiene, by John W. Ritchie, Professor of Biology, College of William and Mary, Virginia, and Joseph S. Caldwell, Professor of Biology, George Peabody College for Teachers, Tennessee. Illustrated by Karl Hassmann and Herrmann Heyer. Yonkers-on-Hudson, New York, World Book Company, 1910.

The purpose of the authors in presenting this "Primer of Hygiene" is to furnish the fourth or fifth grade pupil with a readable book, the text of which is so clearly presented that the reader can understand what he himself can do to keep his body in health—personal hygiene.

PEDIATRICS

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EDITORIAL

TUBERCULOSIS IN CHILDHOOD.

Tuberculosis in childhood is an especially deadly disease and the mortality from it is much heavier during the first five years of life than in later childhood. It has been stated on good authority that amongst hospital patients in London nearly one-third of the child mortality is due to tuberculosis.

In discussing tuberculosis in childhood, the question as to how the disease is usually contracted, at once presents itself. Not many years ago and after Koch had isolated the tubercle bacillus, it was believed in Great Britain generally and by a large number of medical men in this country that infected milk had much to do with the prevalence of pulmonary tuberculosis in children; and not only this, but that the primary lesions of the disease were caused by the ingestion of germ laden milk. But in 1901 Koch made another pronouncement that human tuberculosis cannot be transmitted to cattle nor is bovine tuberculosis dangerous to man. Following the lead of Koch as a rule, German authorities deny the identity of the human tubercle bacillus and the bovine tubercle bacillus which American and British scientific men are somewhat divided in opinion. Speaking broadly, the majority of the medical profession accept two varieties of the tubercle bacillus. It has been asserted, and is still asserted by many physicians that infected cow's milk is responsible for much of the abdominal glandular, and joint tuberculosis and for tuberculous meningitis and acute miliary tuberculosis in many cases, where the localized disease is due chiefly to the human variety of the bacillus. However, in our present knowledge of the matter it would be presumptuous to assign any particular group of lesions to either variety of the bacillus. Further, even if the existence of two varieties be accepted there will yet be needed a large amount of careful bacteriological investigation before it will be safe to generalize or dogmatize as to the association of either variety with this or that lesion. Goodhart and Still have pointed out in their recent work on Diseases of Childhood that since the discovery of the tubercle bacillus in milk there has been a tendency to conclude that infected milk is the chief cause of tuberculosis in childhood, the period of infancy being the period of milk feeding and therefore milk must be the cause.

Records of post mortem examinations shatter this view for it has been shown by autopsies in children that the channel of infection in about 70 per cent. of the cases was the respiratory tract. Consequently it would seem that the special frequency of tuberculosis in the first two years of life is not "due chiefly to infection through the alimentary canal by milk from infected cows," as has been very generally stated.

Dr. John McFadjean, principal of the Royal Veterinary College, London, in the presidential address to the Society of Comparative Pathology and Hygiene of the Birkenhead Congress in 1910, pointed out that the whole of the experimental evidence on which the theory of the intestinal origin of pulmonary tuberculosis in man was built up has been swept away and valuable new support has been provided for the older inhalation theory, but that one ought to avoid the mistake of denying any importance to infection by ingestion either in man or cattle or of asserting that tubercle bacilli which enter the body by way of the alimentary canal are never the cause of tuberculosis with lesions apparently primary in the lungs.

There are those who contend that there is a special susceptibility in childhood of the respiratory tract to the tubercle bacillus and hence the prevalence of tuberculosis during the first few years of life.

An interesting feature of the occurrence of tuberculosis in early childhood is that glandular infection is very common, both the mediastinal lymphatic glands and the mesenteric glands being infected very frequently. Perhaps the main point in connection with tuberculosis in childhood is that the disease does not tend to be more acute but more diffuse. Owing to this tendency to rapid generalization, the prognosis is always grave. Pulmonary tuberculosis is the most common form of the disease in children but on account of its rapid generalization the meninges are often involved and in a very large proportion of cases this is the acute cause of death. Primary tuberculous meningitis is stated to be practically unknown.

That, as in adults so in children, infection of the respiratory tract is the most frequent mode of contracting the disease. The role played by milk in causing pulmonary tuberculosis in childhood has, it would seem, been greatly magnified. At the same time, until it is really definitely known the exact role that infected milk does play in the origin and dissemination of the malady in children, it would be unwise to make downright statements on the subject. After all, infected milk may be a more potent factor in the spread of consumption among children than it is now thought to be. And it will be to the advantage of all that the milk supply be carefully safeguarded.

It goes without saying that fresh air is a Siñe qua non in the successful treatment of pulmonary tuberculosis in young children, for undoubtedly overcrowding in the poorer parts of our large cities is responsible for much of the disease occurring in early life.

BACTERIOLOGY AND CLINICAL ASPECTS OF SCARLET FEVER.

Concerning certain obscure points of scarlet fever it is somewhat extraordinary that so little is known concerning the bacteriology of this disease. Our knowledge, indeed, of the bacteriology of this malady is very limited. Even from the clinical aspect many points are doubtful. This ignorance is the more pardonable when the fact is taken into consideration that scarlet fever as an entity has been recognized since the time of Sydenham, 1655.

Studies and investigations in connection with scarlet fever have been carried on for several years at the Research Laboratory of the New York Department of Health and Dr. Anna W. Williams has published some of the conclusions reached.

In the first place, it is pointed out, that the state of the urine is not definitely known but is the chief source of infection. By many the skin has been considered the most dangerous means of conveying the disease to others, but there are other sources of infection, which cannot be ruled out. The chief of these are the exudates from throat, nose and ear. In the second place it is not known how long the urine may remain infective when separated from the patient. In the third place the exact period of incubation is not known. In the fourth place only one of the many symptoms described is supposed to be pathognomonic. The rash is not strictly characteristic, and desquamation may occur after many exanthema and similar throat symptoms appear in ordinary tonsilitis. The one symptom said by some to be pathognomonic is the enlargement of the papilla and the tip and sides of the tongue. In the fourth place, very little has been done on the minute pathology of scarlet fever.

The only constant change found is a hyperplasia of lymphatic tissue over the whole body. The only characteristic change reported is the appearance of the bodies described by Mallory in 1904. He found certain bodies which he believed to be protozoa and to have an etiological relationship to scarlet fever in four scarlet fever autopsies. However, he could not find these bodies in the skin of living cases and his reported findings have been corroborated to a very small extent up to the present time.

Research work in this direction has been carried on at the laboratory of the Department of Health, with the result that bodies have been found but no definite radiate or star shaped bodies as described by Mallory nor has evidence been found of their being organisms. Some investigators consider that streptococci are the important agents in the bacteriology of scarlet fever and there seems to be little doubt that the streptococcus is a potent factor in the secondary lesions and sequela of scarlet fever and for this reason acute streptococcus serum has been recommended in the treatment. In New York City a few years ago under the direction of Dr. Wilson, Superintendent of the Contagious Diseases Hospital, streptococcus vaccine were tried on a certain number of glandular and joint cases with the idea of influencing favorably the cause of these secondary lesions. The results were encouraging.

It is evident that the bacteriology of scarlet fever requires far more careful and extended observations ere any definite pronouncement can be made on the subject. Nevertheless, it does seem likely that the main question centers around the streptococci.

ANOTHER LOST ILLUSION.

From time immemorial it has been taught that cow's milk is acid, while breast milk is alkaline, and that in order to render cow's milk more like breast milk it is advisable to use lime water—giving it in proper alkalinity for the feeding of infants.

This belief has been rudely disturbed by the co-operation of physiological chemists and clinicians in a comparative study of breast milk and cow's milk and the effects of the addition of alkalies and other anti-acids to cow's milk by Drs. Charles G. Kerley, A. H. Gieschen and George T. Myers, at the New York Infant Asylum, (*Medical Record*, Vol. 64, No. 6).

Utilizing modern chemical methods, particularly bearing in mind the work of the leaders in physical chemistry, Nernst and Ostwald, and being alive to the more recent discoveries and perplexities of the chemical titration methods, these authors have shown that much of the common teachings concerning acidity and alkalinity of milk is erroneous and particularly misleading.

The observations are worthy of study to pediatrists. Their conclusions are as follows:

(1) Breast milk and cow's milk are both acid; (2) the litmus paper test for milk is unreliable because of the variation in the quality of litmus paper, and the litmus taking part in the reaction and not acting as an indicator; (3) the effect of adding lime water or bicarbonate of sodium of feedings is to retard or inhibit the formation of curds by rennet; (4) the teaching that lime water, bicarbonate of sodium, or carbonate of potassium should be added to fresh milk or feedings simply because they are anti-acids is erroneous; (5) the addition to milk or feedings of alkalies or salts that become alkaline in solution is an empirical method of aiding digestion by preventing the formation of dense curds that should slowly leave the stomach and be difficult of digestion in the intestine.

LIME SALTS IN TUBERCULOSIS.

The calcification of miliary tubercles is a recognized process in nature's attempts to replace the tissues which have been destroyed by the tuberculous process. Just what effect such calcification has as a purely physical agent in maintaining the form of the pulmonary tissue is not yet known, nor are we in a position yet to state whether so purely secondary a phenomenon is in any sense to be regarded as reparative, or as a resistive attempt to check cavity formation or to limit bacterial onslaught.

A call is made, however, upon the calcium salts of the body, and in this increased utilization of the lime salts it is logical to aid the natural resources by any added supply. G. Angiulli (*Soc. Lancis. d'Osp. di Roma*), working along these lines has reported excellent results from the free use of lime salts, which he has introduced in the usual doses, as well as the hypophosphites and glycerophosphites by the mouth or by the hypodermic injections of 20 per cent. sterilized solutions of the chloride of calcium and calcium glycerophosphates. Such injections are given daily under strict antiseptic precautions, in doses of from two-fifths grams, usually in divided doses if the larger amounts are injected. In some of his cases as many as 90 injections were given.

In the first five years of his experiments improvement was observed, but no positive cures, but in the past two or more years he has obtained complete relief from all the symptoms.

From the experimental side, Michelozzi, working in the medical clinic at Pisa, has obtained not only clinical but anatomical cure in infected guinea pigs by means of a lime containing serum. The work here outlined suggests the desirability of continuing study of the entire subject of the formation of lime soaps, so ably investigated by many of our American pathologists.

Calonic Irrigation.—Another therapeutic method of great importance in pediatric practice is colonic irrigation. Another valuable adjunct in the management of feverish children, and one now being strongly advocated throughout the medical world, is that of permitting the entrance of plenty of fresh air into the sick-room regardless of the temperature of the patient, the only precaution necessary being the avoidance of draughts, which may readily be accomplished by the intelligent use of screens. Finally, the care of sick children should include treatment in the open air.—*Journal of American Medical Association.*

Hot Enema.—The hot enema or irrigation is used in the treatment of inflammation of the pelvis. It increases the blood pressure, accelerates the heart action, and stimulates the kidneys. The action on the kidneys and heart require a temperature of 110 to 120 degrees F. An enema of 100 to 104 degrees is of no use for this purpose. Following the hot enema it will often be noted that the patient voids a large quantity of clear urine. Kellogg places the hot enema superior to any diuretic drug in the treatment of suppression of the urine and Cantani and Wonte claim good results in the treatment of colic and infantile diarrhea.

PEDIATRICS

ORIGINAL ARTICLES

NEURASTHENIA IN CHILDREN.

BY

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Neurasthenia affects all periods of life, though it receives most recognition after adult age is reached; indeed, in its more marked manifestations, it is rare in childhood. Nevertheless, standard examples are found in older boys and girls, slighter forms are common in quite early years, and childhood necessarily supplies the material out of which adult neurasthenics are made, so that the pediatrist is burdened with the double consideration of both the neurasthenic and the "pre-neurasthenic."

Neurasthenia in its developed from is an acquired affection, an "irritable weakness" of the whole nervous system, explainable by a deficiency of nervous energy. Such a deficiency is most readily produced in the type of child generally spoken of as the "nervous" or "neurotic" child, so that the pre-neurasthenic is in most cases the neurotic, and I propose to consider this type of child shortly before passing on to the largely overlapping subject of neurasthenia.

The "nervous," or "neurotic" child is, like the poet, "born and not made." He is often the child of neurotic stock, or his origin may be traced to alcoholism, tuberculosis, ill-health, or poverty in the parent. Neurotics generally abound in families where great ability or genius predominate, but also where insanity, epilepsy, and other neuroses are met with. The hallmark of the "neurotic" seems to be an over-development of the emotional faculties; at the other end of the scale stands the "unemotional type," and necessarily all grades exist between these two extremes, so that the term neutoric may be qualified by "more" or "less," and, save in its higher grades, its possession may confer a blessing rather than a curse. To the higher grades of neurotic inheritance, however, a curse and a stigma attaches, and the penalty in sorrow and suffering greatly outweighs the reward, especially in childish years before the judgment comes into play.

The "neurotic child" of marked type generally presents his peculiariries in some form from his cradle upwards. He appears hypersensitive in all his special senses; in infancy he responds to the slightest noise, is alarmed at the sight of strangers or bright colors, sensitive to slight changes in his feeding, subject to fits of prolonged and apparently causeless screaming, and is generally a trouble to bring up.

In later childhood his excitability, emotionability, and timidity are excessive. If sent to an entertainment he becomes unduly elevated, and the "treat" very commonly ends in vomiting, general exhaustion, and sleeplessness. A fairy tale fills him with imaginary fears and a sad story leads to floods of tears or unnatural mental depression. He is timid with strangers, fears to be left alone, and his sleep is often destroyed by visions of carnivora or night hags; this tendency to overmastering fears and terrors is characteristic and may exercise a most deleterious effect on both brain and body. In addition, his timidity is often excessive, and at school may lead him into untruthfulness on the one hand, and much oppression and bullying on the other hand, under which he may become passionate, morose, and suffer in digestion and health. At home, he is generally either spoilt and pampered, or ruthlessly misunderstood.

Dr. Leonard Guthrie describes two types of the neurotic child:—

The Restrained Emotional Type.—Where the child is reticent and may be thought dull, sensitive, shy and desirous of sympathy but too proud to solicit it. A child of this type is gloomy, solitary and may become revengeful, or develop abnormal moral scruples or "phobias."

The Unrestrained Emotional Type.—Where the child is impetuous, enthusiastic, vain but with a saving sense of humor. He is generally intelligent and full of energy, but timid and readily discouraged.

The nervous or neurotic child tends to suffer from any of the so-called "functional neuroses," and it is for one of these that he is commonly introduced to the medical consulting room. Among these may be mentioned night terrors, "tics" and chorea, migraine, epilepsy, asthma, etc. He is also peculiarly subject to acute rheumatism in all its manifestations.

Upon examination the neurotic child gives ready indications of his temperament. He is often thin, excitable or timid, and generally shows some of the "nerve signs" described by Dr. Francis Warner: the over-mobile facies, the "nervous" or "weak" hand balance (when the arms are extended), the uncontrolled head and body balance, finger twitches, and restlessness. Flushes and palpitations of the heart occur in a proportion of older subjects.

From the point of view of neurasthenia the neurotic child may be shortly summed up as *one who is unduly prodigal of his nervous energy.* Such causes as domestic mismanagement, overwork, lack of sleep, or over-use of emotional and imaginative faculties, acting on such a nature readily lead to exhaustion of his energy and leave him in a condition of nervous bankruptcy.

Dr. William McDougall has suggested that "fatigue" is a protective mechanism against excessive loss of nerve force, and is brought about by a lowering of the ratio $\frac{\text{“nervous energy”}}{\text{“resistance to be overcome.”}}$ He points out how fatigue is never absolute but always *relative,* how it may be banished by "interest" for a time, and how, when it has again returned, some exciting event, such as a burglary or fire, will again dispel it. This he explains by a call on some hidden source of nervous energy whereby the $\frac{\text{nervous energy}}{\text{resistance}}$ ratio is again raised. "Fatigue" (Ermudung) is thus banished, but such abuse of the fatigue mechanism tends to lead to "exhaustion" (Erschopfung). In addition, he thinks that toxins may play a part in fatigue by increasing the "resistance" to nervous flow, which he places in the synopses of the neurons.

Such a theory supplies a fascinating key to the study of neurasthenia, which must be considered as a condition of "exhausted" nerve force. Thus, for example, the "neurotic" would owe his susceptibility to a deficiency in his "resistance mechanism" whereby his nervous energy flows away too readily, and the warning of "fatigue" occurs only when "exhaustion" is imminent. This explains in these children the odd mixture of excessive overflow and exhaustion which is so marked a characteristic, and makes the "neurotic" child, not only potentially, but often actually to a great extent "neurasthenic" also.

The term neurasthenia has been so little applied to nervous conditions in childhood that it might appear to some, on first thought at least, that the condition is non-existent. As a matter of fact we are sufficiently familiar with it under other names, and, in its slighter forms, as an accompaniment of other diseases, though we have, perhaps, not been accustomed to apply so high-sounding a name as neurasthenia to it. The subject is, indeed, a wide one, and I shall make no attempt to cover the whole ground, but shall touch only on certain parts of it which seem to me of interest and importance.

Neurasthenia in children shows itself in various grades, and we cannot confine our attention to those well-developed forms more commonly seen at or after puberty. These are cases, often, of nervous bankruptcy, but a deficiency of nerve force is also present to an important degree under various conditions occurring in younger children.

Neurasthenia in Young Children.—A deficiency of nerve force may be present from earliest childhood, often as an accompaniment of the "neurotic" temperament, and occasionally with mental deficiency. Cases of this condition, which might be described as "neurasthenia minor," are generally the offspring of neurasthenic or neurotic parents, and may drift into more confirmed neurasthenia in later life They appear weakly and tired from their cradle upwards, have poor power of concentration, shirk exertion, suffer with headaches, and are abnormally sensitive to climatic conditions. They feel depressed and miserable when the barometer falls, the temperature rises, or the wind changes into the west quarter. They are of weak and capricious digestion, are of subnormal nutrition, and suffer from cold hands and feet. They are worse in the spring, when an excessive langour overtakes them and they crave for a racing climate with plenty of sun, and are depressed by damp and leafy places. These peculiarities may affect them from early childhood, though they only learn by degrees the explanation of their manifold sensations. They are often the children of the well-to-do, and their sufferings are generally increased by well-meant efforts to fatten them.

A class the opposite of the above is the starved neurasthenic of the elementary schools. He is the child of poverty, and his production of nervous energy is probably congenitally deficient. As a result of this and of underfeeding and insufficient sleep he reaches the condition so familiar to those who have visited these schools in the poorer parts of the great cities. He is thin, pallid and apathetic, the embodiment of fatigue both mental and bodily, and, though he is too young to tell us much about himself, it is sufficiently obvious that chronic "exhaustion" or deficient nervous energy most correctly sums up his disability. He cannot learn, for his power of attention is nil, he is too listless to play, and he passes his time in a sort of day-dream, obsessed by his own misery. If the physiognomy is a guide to the feelings, many of these children must suffer mental distress of an amount which it is painful to contemplate.

Another type of "minor neurasthenic," who may or may not be separable from that first described, is the child with gastro-intestinal dyspepsia, so commonly described under the terms "mucous disease" or "carbo-hydrate dyspepsia." Such cases are too well known to need description here; their thin and flabby frames, and pallid faces with dark and puffy lower eyelids, their cold and "froggy" hands and feet, their wayward temper and listless demeanor, combined with a number of neurasthenic symptoms, form a well-recognized picture.

The late Dr. Savill did us a valuable service by his insistence that neurasthenia is in the main an acquired disease and must be treated by, above all, removing its cause. He believed that large numbers of adult neurasthenics owe their disease to gastro-intestinal conditions, and that the relief of these conditions was accompanied by cure of the neurasthenia. My own observations do not lead me to so hopeful a view of the case in so far as the majority of these dyspeptic children are concerned. I do not find that treatment of the gastro-intestinal tract leads altogether to cure; the children improve, but they do not grow fat and normal, and I have come to believe that in these cases there is often a want of nerve force preceding the dyspeptic disturbance and responsible for it. The stock of nervous energy in these children is not sufficient for adequate digestion, a vicious circle is soon established, and their nervous system is further damaged by poisons formed during the processes of ill-achieved digestion. The condition is commonly aggravated by, and in some may be entirely due to, insufficient mastication, dating from prolonged pap-feeding in infancy.

They have never learnt to chew, their masticators are feeble, their teeth become carious, and it is often difficult to persuade parents and nurses to persist in completing their education in this respect.

Intestinal toxins are doubtless responsible for many of the nervous and other symptoms in these children, but another important factor apt to be overlooked is "splanchnic vaso-motor paresis." The achievement of latest acquisition in man, and that which especially distinguishes him from the rest of the animal kingdom, is the power of assuming and maintaining the upright posture. This he owes largely to his control of the vaso-motor mechanism in the splanchnic area. Now a power acquired late is also one of the first to go, so that want of nerve energy early affects the splanchnic mechanism. We all know how readily fatigue, shock, or a recent illness will lead to faintness due to a temporary paresis, and this tendency to "pooling" of blood in the splanchnic area is characteristic of most neurasthenics. In these dyspeptic children it is a marked phenomenon and largely responsible in them for the feeble circulation, the pallid face and dark-rimmed eyes, the tendency to faints, and, in addition, probably, some of the nervous and intestinal symptoms, including the mucous flux.

It is a well-recognized fact that neurasthenic symptoms are worse (or may even be solely present) after meals, and this, sometimes attributed to toxins, is better explained, in my opinion, by an increase of this splanchnic congestion. For the increase of symptoms may immediately follow the eating of indigestable food, and is accompanied in some cases by a distinct dragging sensation round the orbits, followed, at a later stage, by the appearance of the characteristic dark rims round the eyes. I find that a proportion, also, of these children with "carbohydrate dyspepsia" give Abram's "cardio-splanchnic phenomenon" as evidence of their splanchnic paralysis. This consists in an increase of cardiac dulness to the right of the sternum on recumbency aided or not by abdominal massage. It is, no doubt, a very coarse test, and its absence in many is no proof that their splanchnic vasa-motor control is sufficient, as I am very sure in most cases it is not.

We may now consider the treatment of the young neurasthenic before passing on to the older group, but first we must pause for a moment over the pre-neurasthenic or neurotic child, for the treatment of neurasthenia in childhood should be, as far as possible, preventive.

It is of the utmost importance that the neurotic child be recognized early, and steps taken for his protection. In infancy he should lead as "vegetable" an existence as possible, and must not be stimulated and exhibited for the amusement of an admiring circle; indeed, a quiet, uneventful childhood is essential to his normal development. Most necessary is the thorough education of his masticatory instinct, so that he may avoid those dyspeptic troubles which so readily plunge the nervous child into conditions of neurasthenia. The question of schooling is of vital moment, and the problem must be separately considered in each individual case. As a rule the large public schools are not to be recommended for these children, and competition, cramming, and even in some cases schooling of any sort, may have to be forbidden. If the teaching profession would learn more about the pathological aspect of child life, or would give their medical officers more latitude in dealing with such, children of this sort might be more safely trusted to run the gauntlet of school life.

In the young neurasthenic the underlying conditions causing or aggravating the condition must be sought and removed. Poverty may be irremediable, but at any rate such children should not be made to work through the five hours' day of the elementary schools, unless their malnutrition can be relieved. This is clearly relative over-pressure for their impoverished brain cells. In the well-to-do the digestive tract is generally partly or largely responsible. In well-nourished children a considerable amount of langour and depression may be induced by overfeeding, and this must be relieved. Mothers and nurses have a very definite idea of how much food a young child should take and will pit their belief against the most strenuous rebellion of the child's digestive organs. The food idiosyncrasies of neurotics, of which much is written in books, are, in my experience, largely the result of this stuffing process, the overfeeding and consequent dislike to food being largely achieved by the pouring in of sweet carbo-hydrate "slops." When the digestion is upset, the appetite gone, and the child begins to lose flesh, the mother is greatly concerned, and the child is tempted with sweets and spices, or lives upon "extras" between meal times. So he wastes, becomes "nervous," and drifts or is pushed into the condition called "carbo-hydrate dyspepsia."

In treating such cases it is well that the medical attendant clear his mind at the outset of all he has heard of "anorexia nervosa" and similar conditions. This is a rare disease, and danger of starvation need not be apprehended in the condition which he is required to treat. Often the child on account of his waywardness, irritability, and likes and dislikes has been thoroughly spoilt or misunderstood by a neurotic and foolish parent. In such case it may be best to send him to some quiet country spot under the care of a cheerful, easy-tempered, but firm nurse. A week or more in bed on a milk diet is good to enable the digestive organs to recover their functions and the splanchnic vaso-motor system its tone.

Thereafter must begin the education of his masticatory muscles, all "slops" being forbidden and food given in a dry form, so that no more will be eaten than can be thoroughly chewed and insalivated. Drinks must be small and reserved for the close of the meal, but water should be allowed one hour before meals when desired. Carbo-hydrates are undoubtedly prone to disagree with these children, and, especially in the form of sugar, should be restricted, or even for a while entirely eliminated. An excess of proteids, however, to which this is apt to lead, will also poison these children, especially if accompanied by constipation, which is apt to follow the change of diet. Such constipation must be carefully combated.

In slighter cases a mere change of diet, reducing carbohydrates, forbidding slops and drinks with food, and presenting all food in a dry form needing mastication may suffice. Currants, sultanas, dried fruits, and all which leave an irritating residue must be especially prohibited in these children, as these increase and may even originate their trouble. Plain but appetizing food should be placed before the child, he should be made to remain at the table a suitable time, and if he eats little no comment should be made, but no food allowed before the next meal. In this way bad habits are broken, the digestive organs are given a chance of recovery and, as a rule, appetite soon appears.

In addition to dietetic treatment the tendency to splanchnic congestion may call for special measures. The feet and legs must be well covered and rubbed if they get cold, recumbency for an hour or so daily is good, exercises to strengthen the respiratory and abdominal muscles are useful, and a cold sponge or spinal douche where these are followed by "reaction." Drug treatment is often of service, calomel is occasionally valuable, malt extract and pancreatin may help to tide over a difficult interval, and I think I have seen good follow the use of digitalis given with a view to bracing up the splanchnic circulation.

Like other neurotic children these cases should have a quiet, uneventful life arranged for them, and as much of their childhood as possible should be spent in country air and surroundings. Their conduct should not be too closely watched, but latitude allowed, trivialities passed over, and a broad, optimistic view of life taken.

Neurasthenia in Older Children.—Dr. Savill, in his instructive book on neurasthenia, divided the disease into four etiological groups:—

1. Toxic Neurasthenia.
2. Malnutrition Neurasthenia.
3. Fatigue Neurasthenia.
4. Shock and Traumatism.

This grouping is convenient and seems to cover most of the ground.

As a rule, the causation is mixed; thus, the child with "carbo-hydrate dyspepsia" is generally a "neurotic" and hence liable to dissipation of energy, and exhaustion; he may even be from the start to some extent neurasthenic. Hence, he belongs in part to group three, and malnutrition of some extent may also entitle him to inclusion in group two. His main trouble, however, is gastro-intestinal, leading to a toxemia which brings him into group one.

Neurasthenia in older children is generally in the main a fatigue or exhaustion neurasthenia (group three) due to overpressure, actual or relative, in a neurotic or nervous subject. Malnutrition and dyspepsia may also be combined, but are generally subsidary and often subsequent. Shock and traumatism (group four) may, of course, be a cause in childhood, and I have at the present moment under my care a case of traumatic neurasthenia in a girl of twelve, but as there is in these cases nothing special to the age period I do not propose to discuss them here.

Over-pressure, especially combined, as so often happens, with deficient sleep is, then, the condition most largely responsible for neurasthenia in older children. The symptoms present a mixture of the conditions described as cerebral, spinal, cardiac, vaso-motor, and gastro-intestinal. There is a loss of power of concentration accompanied by headache, sleeplessness, and sensations of fatigue and depression.

Obsessions may appear, and "phobias." The character appears to change, leading to great irritability of temper, and unaccustomed emotional attacks. "Extreme fatigue," says Mosso, "seems to consume our noblest qualities—those which distinguish the brain of civilized from that of savage man."

On the physical side appears loss of muscular energy, loss of appetite, wasting, cardiac palpitation, and sometimes functional albuminuria. In addition may appear such incoordinations of muscular movement as are shown by habit-spasm, stammering, frowning, finger-twitching, and general fidgetiness.

It has been pointed out with truth that it is the backward who suffer from over-pressure in the elementary schools, but the bright and precocious in upper-class schools, where they are pressed to win distinction for their teachers. Such pressure can only be harmful, and leads to neurasthenia, due, as Dr. Hyslop says, "to exhaustion from too early and excessive use of functions which ought in the life-history of the individual to have developed more gradually, and at a later period."

The causes of over-pressure would form a volume in themselves, and we can here only refer briefly to a few of the more important.

Within the School, over-length of individual tasks and over-length of time in school are the important factors. Dr. Clement Dukes allows six hours per week at the age of five to six years, nine hours at six to seven years, twelve hours at seven to eight years. But where is this moderation practised? In the "preparatory schools" of this country 36 hours per week appears to be the average. Bad arrangement of tasks, deficient ventilation and lighting, and defects of vision or hearing are common contributory causes of school fatigue.

Outside the School, excess of homework and working amid noise and distractions holds the foremost place, especially when this is increased by private lessons, often in music, or the practice of a foreign tongue with a French or German governess.

All these causes of over-pressure are rendered more potent when predisposing causes such as malnutrition, post-febrile debility, puberty and rapid growth, insufficient air and exercise, under-feeding or insufficient sleep are also at work. The "neurotic" or "minor neurasthenic" child is, of course, especially susceptible to over-pressure.

Insufficient sleep is so potent a cause as to merit a word to itself. In neurotic children, sleeping is often a difficulty, and entertainments or other excitement are commonly followed by restless sleep or insomnia. The same may occur from evening homework, so that these causes not only curtail sleeping hours, but often render sleep itself less efficient. Dr. T. D. Acland did good service some years since in calling attention to the insufficient hours given to sleep in our big public schools, and there is reason to believe that some improvement has since taken place as a consequence. As Sir James Crichton-Browne has pointed out. over and above the "reparative sleep" needed by the brains of adults, the growing brain of childhood requires in addition an extra rest-time to which he has fitted the appropriate name of "germinal sleep."

The treatment of the neurasthenic boy or girl resolves itself into the removal of the cause, whether over-pressure or want of sleep, or both. Change to country air and country pursuits, with cheerful company and a quiet life, will generally complete the cure in these cases unless the damage done is of considerable extent. An open, dry locality should be chosen, with much sun and little foliage, so that abundant time may be spent out of doors. Long hours in bed must be provided, cold bathing is useful, and the work of the digestive organs must be studied. In cases where nutrition is very low a full Weir-Mitchell treatment may be advisable or necessary.

Any special condition, such as anemia or constipation must, be specially treated, and care must be taken that sufficient time is given for complete recovery. It is probable that a proportion of these cases do not return wholly to their former health, a tendency to relapse may remain, and attempts at brain work may be followed by warning symptoms which teach them to desist. In any case a return to former occupations must be gradual or tentative, and the attention must be concentrated only in short spells at first. The smaller the causative over-pressure has been, the more unstable must be the nervous system.

it has overthrown, and in some cases it may be obvious that a strenuous future is altogether out of the question. Nevertheless, these cases must be saved from chronic invalidism. It must be remembered that a stimulus is needed to call forth a response, and, after sufficient rest has been allowed and compensation begins to be established at a low level, these patients must be coaxed further, and the amount of work steadily increased till the level of ordinary living is attained. This entails a carefully planned out life, the work arranged being of a different kind, preferably physical, to that which originally determined the breakdown.

At the same time it must be borne in mind that physical exertion carried to excess will lead to disaster as surely as will brain work. Lastly, it may be said that the older the patient the more nearly do his complaints, their causation, and the method of their treatment approach to those of the adult neurasthenic whose ills it is not my lot to discuss in the present paper.

THE ORTHOPEDIC TREATMENT OF INFANTILE PARALYSIS.*

BY

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As much, and in some particulars a great deal more, is known regarding infantile paralysis, than is known of whooping-cough, scarlet fever, measles, chicken-pox, rheumatism, and many other diseases which might be mentioned. But the general profession has looked upon this disease in such a grave manner that they have thrown the people into hysterical confusion, so much so that it has reached upon our soberer judgment, and many physicians practically abandon a patient as soon as they have positively decided it is a case of infantile paralysis. Then the bewildered parents rush to the first individual who will promise them the most.

We all know cases which, even after the acute stage, recover considerable use of their muscles unaided, and in some cases make almost a complete recovery. This being the case, is it any wonder that all kinds of charlatans are reaping a rich financial reward from these patients? Yet if the same cases had been treated along well-founded and scientific lines they would have been much more improved, with far better results at less cost and without the loss of the most valuable time for beneficial results.

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*Read at the 42nd annual meeting of the Minnesota State Medical Association, held at Minneapolis, Oct. 5, and 6, 1910. Published conjointly with the Journal of the Minnesota State Medical Association.

I do not now recall any malady to which the profession has given so much study and research, with returns so great and beneficial, as it has given to the symptomatology, pathology, and treatment of infantile paralysis. Simply because we have been able to identify the real bacterial agent or its mode of invasion, we ourselves are constantly announcing to the world, through the medical and lay papers, that we know nothing of this disease, that it is something new, and that we know of no treatment for it. Nothing could be farther from the truth. Let us look at the facts: It is not a new disease; and there are few diseases for which so much has been done, can be done, and should be done, as for infantile paralysis.

I do not agree with some, that we are dealing with a disease in which we are handicapped by our inability to recognize its presence until the danger is irreparably done. The conception of the symptoms of infantile paralysis as given in the older text-books must be markedly modified, which modification is furnished by many recent writers, and symptoms, while varying are quite positive and apparent to men of any experience. If the disease is not positively diagnosed, there are general conditions always present which demand our immediate attention, namely, fever and debility. The treatment of these two symptoms is supportive and eliminative, and would be indicated in any infectious disease, and is the proper and only treatment for the early stage of infantile paralysis.

Since 1886 I have studied a great many cases, especially clinically, for we really had many more sporadic cases in New York at that time, and have had since through the West, than the general practitioner seems aware of, for these cases were not usually recognized in the early stages, and naturally drifted into orthopedic clinics, and the orthopedic surgeon saw the most of these cases.

It has been my experience that cases which were treated in acute and sub-acute stages by frequent flushings of the bowels and reducing the temperature, if necessary, by repeated baths, administering an anodyne, when required, for pain, keeping the affected limbs quiet and warm, making local applications of ice-bags or counter-irritants to the spine or head, as the symptoms suggest, are far less likely to have as marked permanent paralysis or as many contractions as seen in patients treated in other ways; and the patient is far better in a general way and responds more readily to mechanical and surgical treatment if the acute stage receives the above general treatment. But, at best, over 80 per cent. are more or less crippled. Rarely, however, if properly treated, do they become helpless cripples. I can state positively that I have never seen one case so severe but that orthopedic treatment would help it, and in many instances when helpless, would so relieve as practically to cure it.

To prevent the deformity is most important, for it not only checks extreme continuous muscular wasting of the paralyzed muscles, but it prevents muscular strain of the non-paralyzed muscles, and muscular strain amounts, practically, to a paralysis, so far as usefulness is concerned. Let me more practically illustrate what I mean. Many times when there appears to be a complete paralysis of all of the anterior leg-muscles and the non-paralyzed gastrocnemii, if the foot is held in the position of marked talipes equinus as soon as the deformity is overcome by lengthening the tendo-Achilles, and the foot is brought to a right angle and held there a few weeks, it is quite surprising how voluntary motion of the toes will develop and the tibialis anticus begin to functionate after years of apparent paralysis, showing that its inability to perform duty heretofore was simply an apparent paralysis due to muscular strain. The most emphatic proof of this is seen in paralysis of the shoulder, arm, and forearm. Oftentimes by carrying such an arm in a sling, the fingers which had been motionless so far as the will of the patient was concerned, will soon show some movement by voluntary effort. By soon I mean this will be done in a few minutes. By keeping the arm in a sling for weeks and months the patient will obtain a useful wrist and hand motion in that position. In short, "an over-stretched muscle while the strain is continued loses its function." Therefore, rather than permit these deformities to occur, let us prevent them, and protect the muscles in an early stage from muscular strain by proper mechanical supports in the first days of the disease. This, much more than heretofore, must be our care.

Every deformity illustrated by the cuts in this article could have been prevented by early, well-directed orthopedic treatment. I do not mean by various steels, leathers, buckles, stop-joints, latches, keys, etc., but that, during the acute and painful stage, gradually the flexed limb should be teased straight by bandages, by wooden, felt, or leather splints, or by plaster of Paris. I might perhaps with profit suggest that in using plaster of Paris, or any other hard material in any stage of the deformity, that the parts be well padded, and the circulation be watched very carefully for fear of pressure-sores or trophic ulcers. If the patient has so far recovered from the deformities and paralysis as to begin to use the limbs, they should not be used too much, so as to produce the muscular fatigue or strain heretofore referred to.

After six or eight weeks following the acute symptoms, braces should be applied to prevent deformity, which is sure to occur, during the next two or three years, at least, if the patient by his own effort is not able to voluntarily hold the extremities straight and control them.

If the muscles of the back are paralyzed a support should be adjusted to hold the spinal column straight, for, sooner or later, structural changes will take place in muscles, tendons, cartilages, and bones, resulting in a hideous, progressive, and incurable deformity of the spine and probably of the entire trunk. In short, a paralytic deformity is always progressive in the young and growing.

In the application of braces I wish the general profession would look upon this therapeutic measure in a more practical and simple light, for the general practitioner is the one to prescribe the kind of brace to be worn. By *kind* I do not mean the material; I mean what is required of it. A study of the paralyzed muscles and the position of the trunk and extremities will indicate to such practitioner the requirements of the support necessary. If he does not know the brace necessary, and its strength and mechanism, familiar as he is with the action of the muscles, certainly no instrument-maker can help him out. Through him the orthopedic instrument-maker does a great deal of harm, unless he personally supervise the manufacturing of the brace and then see that it is giving the support and assistance required of it.

Every medical man in the State of Minnesota today knows more about the application of braces and their indication and requirements than any maker of orthopedic instruments even can or will know. All they require is to give the matter a little study, and then call to their assistance a blacksmith, a locksmith, a harness-maker, or a carpenter. All that is required of him is to work under the physician's direction. The physician would be far more justified in sending a patient to a druggist without prescribing for him than he is in sending him to an orthopedic instrument-maker with orders for a brace, for the druggist would do a great deal less harm than a worker in iron prescribing for a diseased or deformed limb; and this is what they are actually doing today in hundred of cases.

But there is another side to these cases of deformity resulting from infantile paralysis. The treatment is long and tedious, the patient or parents become tired and discouraged, and, no matter how enthusiastic the physician may be, and how much he has tried to educate them that the treatment, in many cases, covers a period of years, they will drift into different and more alluring channels, which will finally result in the extreme deformities illustrated in this article.

And that brings us to the radical surgical treatment of these cases, but before dealing with this I must refer to a treatment which is much in vogue, and upon which I am inclined to think there is altogether too much stress laid. I refer to massage and electricity. Certainly, massage, that is, rubbing of the limbs, is beneficial, but I question very much whether the so-called scientific massage is any more beneficial than a real good oil rub administered by the mother or any older member of the family, and then keeping up the warmth of the limb induced by the manipulation by extra-warm clothing, night and day.

As to electricity, which is universally applied, I am speaking now only from clinical observation. I agree with Dr. Sachs of New York that, "except as a matter of exercise, electricity is practically useless."

In 1886, when I was house-surgeon of the New York Orthopedic Dispensary and Hospital, it was the routine in all cases of infantile paralysis to turn them over to the neurological department where the principal treatment was electricity.

After months of treatment there they would usually return to the orthopedic department with no change whatever in their conditions that I could see, except a more marked deformity; and it has been practically my experience ever since that electricity does not seem to be of any benefit, except in those subacute cases where there is always some improvement as regards motion, whether treated or not. I am sure electricity and massage do harm in acute stages where there is a peripheral neuritis. Rest and warm applications in this stage give the most relief.

As to the treatment of these neglected cases with extreme organic deformities; I must say the results are many times spectacular indeed. Patients are frequently brought to the office crawling about on their hands and knees, and a careful examination, finding the paralyzed and unparalyzed muscles, and then overcoming the contracted tendons by gradual reductions with plaster of Paris casts or by tenotomizing or elongating the contracted tissues, and then adjusting braces with catch-joints, springs, or what-not to act for the paralyzed muscles, we have been able in many instances to transform a helpless cripple into, a useful, self-supporting individual.,

As to tendon-transference: If we are not well up on the literature of the subject and have not had some personal experience, we might be led to believe more in its efficacy than is actually warranted, for, in my experience, it is only applicable to a few selected cases. I must acknowledge that there are men of more experience who are more enthusiastic about it than I am, but, even in their best results that I have seen, they advise the continuous use of the mechanical supports for a long time after the operation, for fear of over-strain, either by the action of the opponent groups or by erroneously applied body-weight.

In arthrodesis the cases must be even more carefully selected before we decide that a bony ankylosis of the joint is indicated, and I think, for various reasons, it should never be performed in young and growing children, though I must acknowledge that it is advocated by some leading orthopedic surgeons.

We are not yet in a position to apportion the place of nerve-anastomosis in the treatment of infantile paralysis.

This boy you see walking without any support, came to my office in a go-cart and was carried to the examining-room in his father's arms. The history is that one year previous, (two years ago now) he had an attack of infantile paralysis. The knees were flexed to a right angle, and the feet were in the position of marked talipes equinus. Without any operation, but simply by repeating plaster dressings, gradually straightening the knees and feet from time to time, I finally completely cured his deformity, as you see. He wore these braces continually for about a year. Of late he has been allowed to take them off and walk a little without any support whatever, as you see him walking now, but I shall insist upon his wearing these braces most of the time for years in order to prevent the muscular strain of over-work, to which I have endeavored to call particular attention.

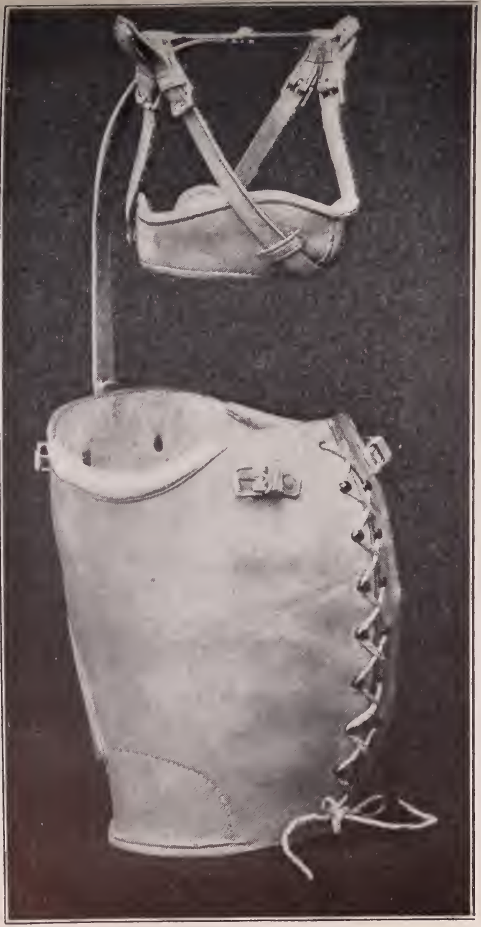
I may say I have yet to find a case of infantile paralysis no matter of what age or to what extent the deformity exists, which could not be materially improved, either by mechanical or surgical treatment.

Discussion.

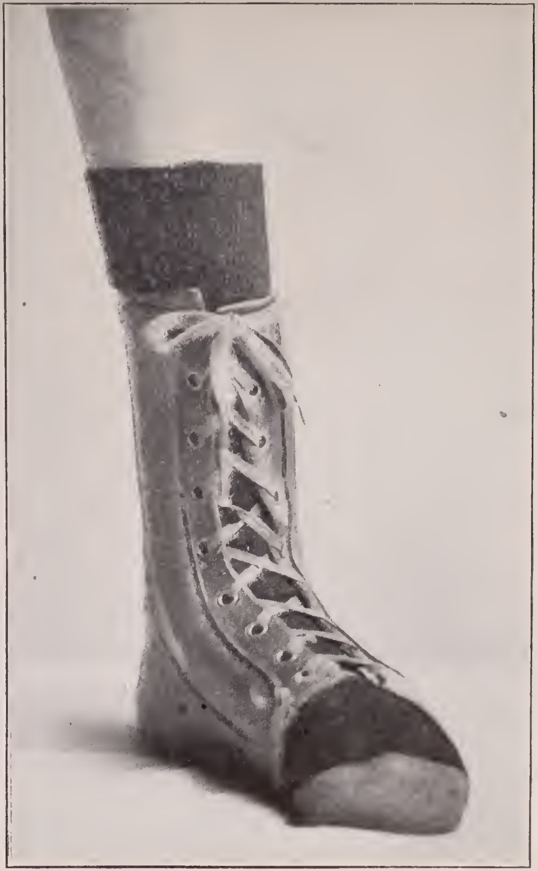
Dr. C. Eugene Riggs, (St. Paul): You can always trust Dr. Gillette to say the right thing at the right time. Nothing could be more timely for discussion than the subject of infantile paralysis. The Census Bureau of Statistics tells us that in the United States in 1909 there were 569 deaths from this disease.

Infantile spinal paralysis is not a disease of the anterior horns of the spinal cord *per se*; it is an affection of the entire nervous system, the point of departure being probably its membranes. The cord is affected more than the brain, and the anterior more than the posterior horns. All of Dr. Flexner's attempts to discover, microscopically, the infectious agent have been fruitless. The virus is filterable, just as is that of rabies, and he thinks that it is too minute to intercept those rays of ligh. that are visible to the human eye. It gains access to the nervous system by way of the nasopharyngeal mucous membrane. It is contagious, and each case should be quarantined three weeks. Much can be accomplished by treatment after the acute condition has subsided, and to be efficacious this must be persistent and long continued.

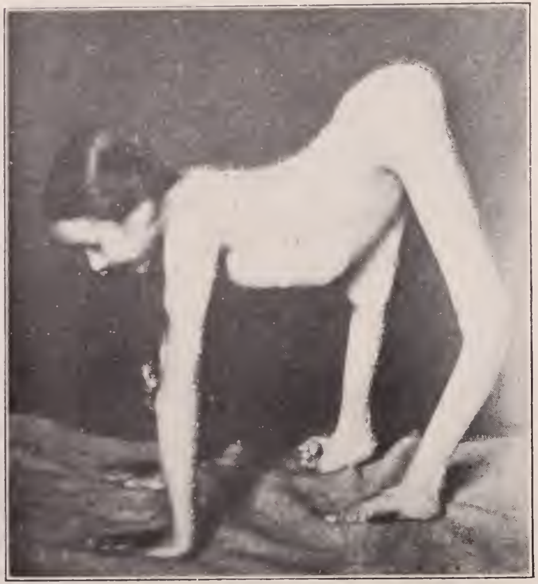
Marinesco has told us hat the nutrition of the multipolar ganglion-cell depends upon the stimulation that comes to it from without; hence, from a physiologic standpoint, the importance of mechanical stimuli, such as electricity and massage.



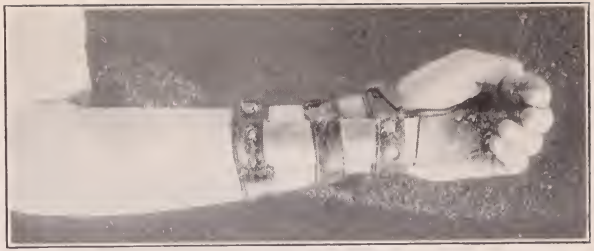
A jacket that can be adjusted, and if the deformity extends to the neck muscles the jury-mast can be worn also. This can be removed, and the child receive massage, etc.



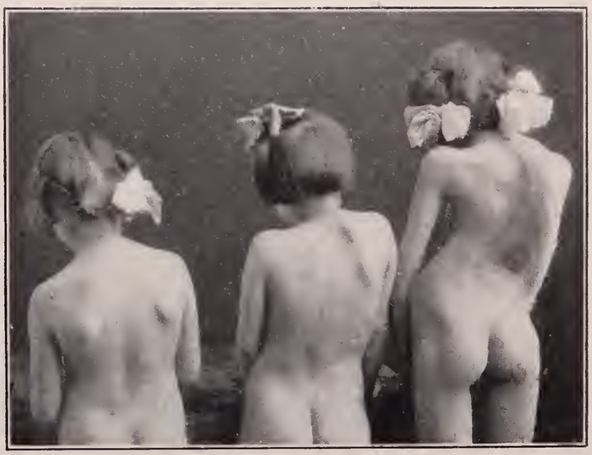
A simple leather support with steel stays, which can be worn inside of the shoe. It seems to prevent a deformity in paralysis, and ought to be worn after the deformed foot has been straightened.



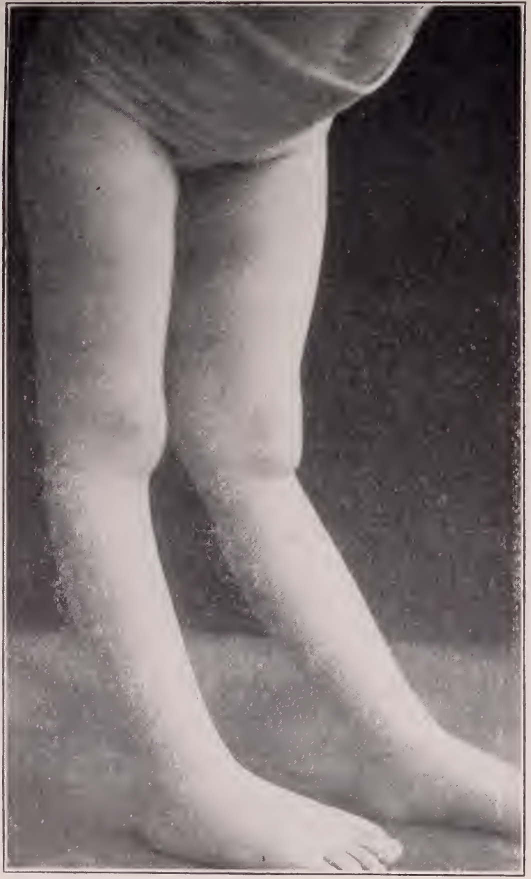
About fifteen years ago this little girl walked into my office in this position. By the use of casts I succeeded in straightening the feet and knees, then adjusted leg-braces to prevent the return of the deformity, and a corset to support the spine. She walked for years with the aid of crutches, later walked with a cane, and can now walk, still using, of course, her braces, without canes, and is teaching school.



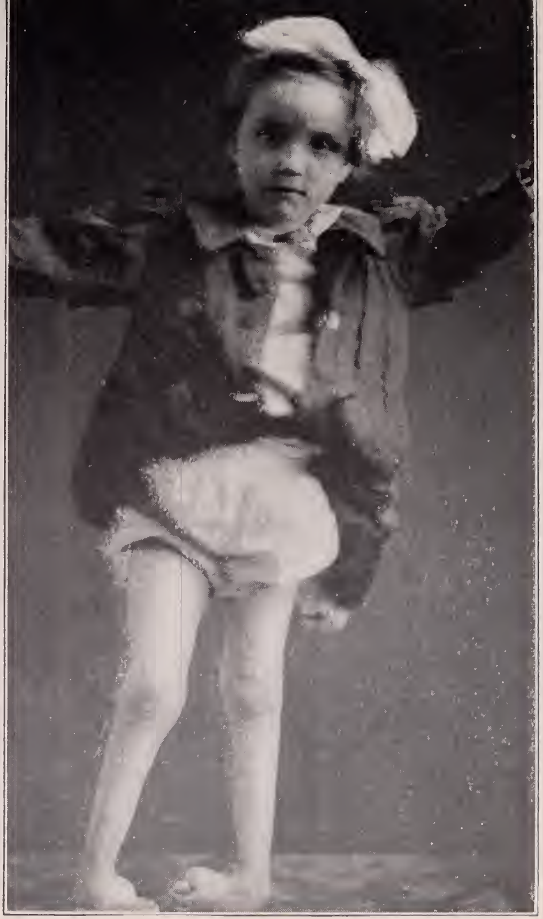
This case consulted me about eight months ago. He had wrist-drop, and apparently complete paralysis of his hand. He has been wearing this simple support and demonstrating how much he can flex the fingers after wearing this support four months, showing that the condition was not due wholly to paralysis, but partly to muscular strain.



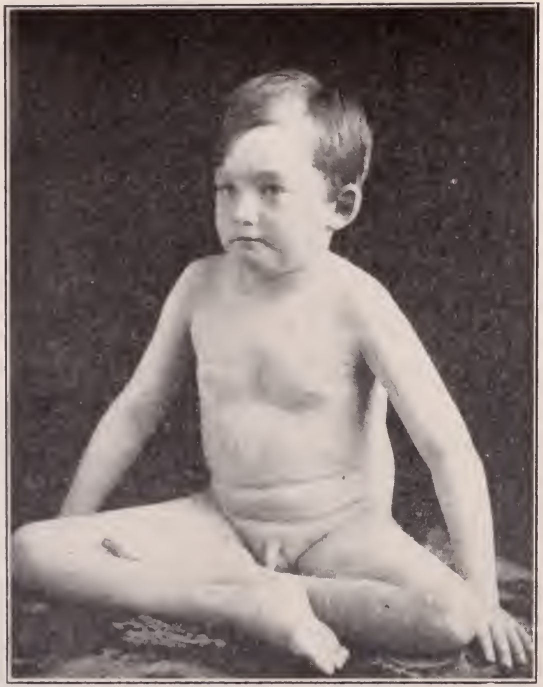
The first of these three children represents a slight curve after infantile paralysis. In the second one the deformity has progressed a little further, and rotation in the vertebra is beginning. The third case shows an extreme deformity which could have been prevented by a slight spinal support adjusted early.



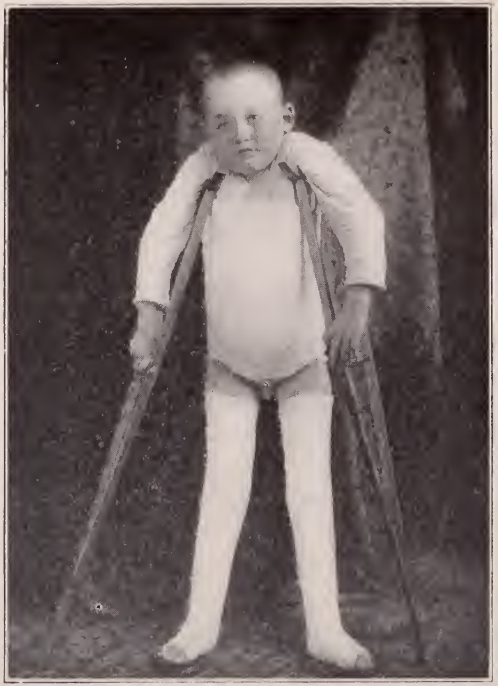
This child can walk very well without any support whatever, but with the legs in this position and constantly walking, there will soon be a deformity of the knees, which will prevent walking.



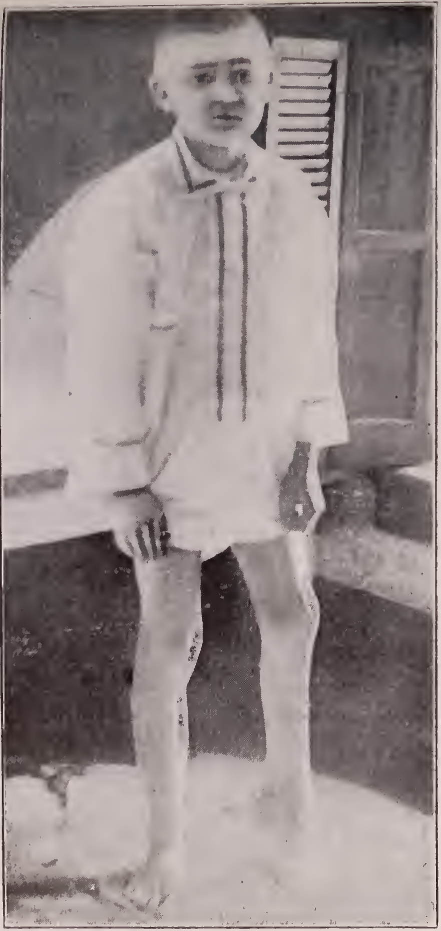
A little girl whose feet were perfectly straightened after paralysis, but as the physician failed to apply mechanical support to hold them in the correct position, the deformity has again returned.



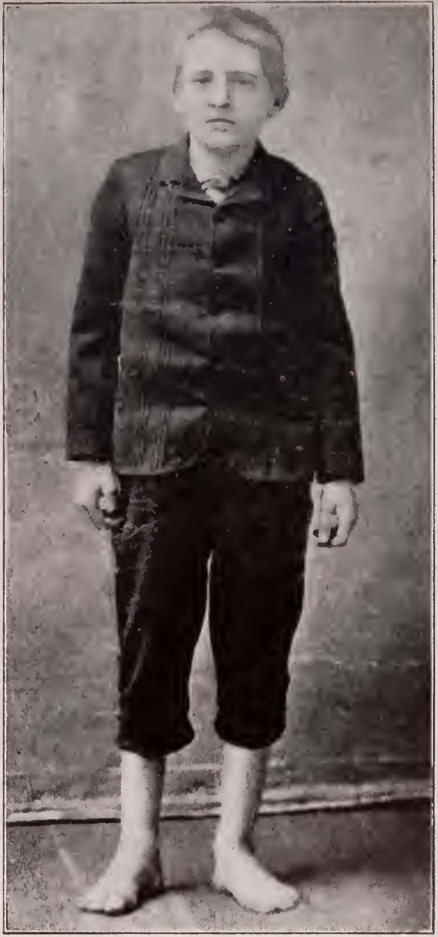
This little boy was brought to the State Hospital with his legs and feet in this position. His back muscles are also paralyzed, and he can sit up only by resting his hands on the floor.



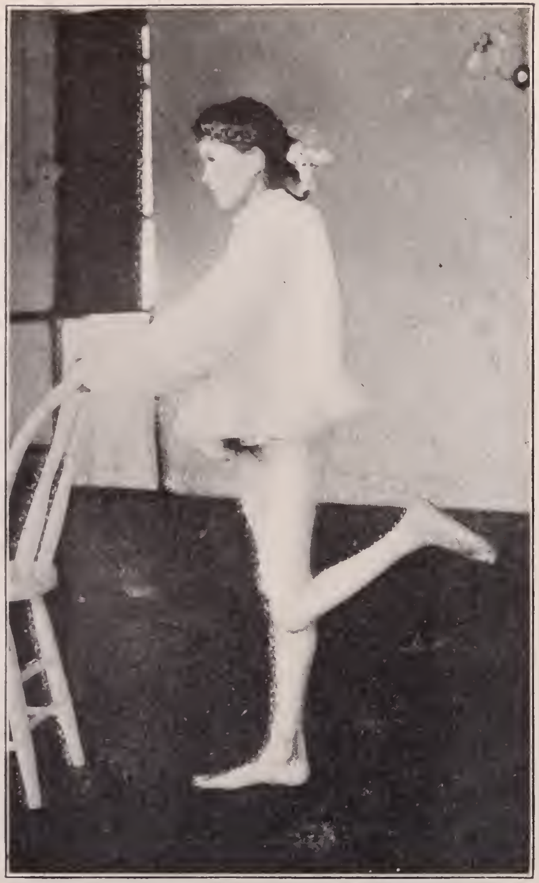
This picture shows him after about two weeks' treatment of repeated plaster dressing. His feet are straightened, and the casts being applied to hold the spinal column and legs straight, he walks with the aid of crutches and a little balancing. For years this boy will have to wear leg-braces and a removal jacket.



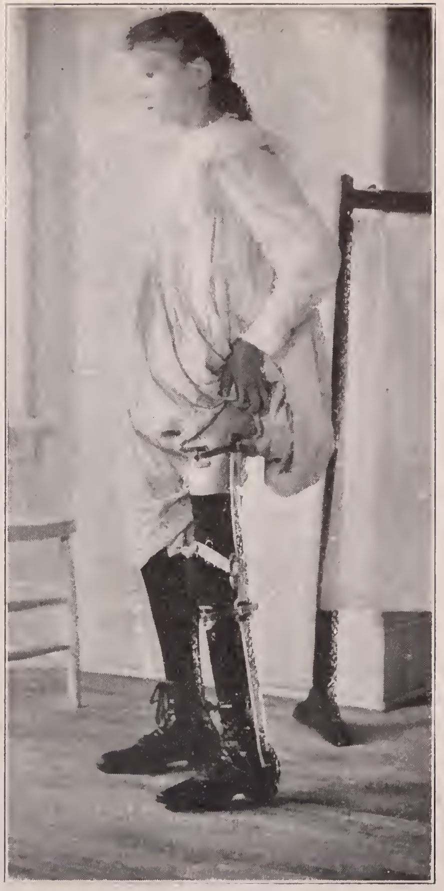
A case of apparent complete paralysis of the anterior leg-muscles.



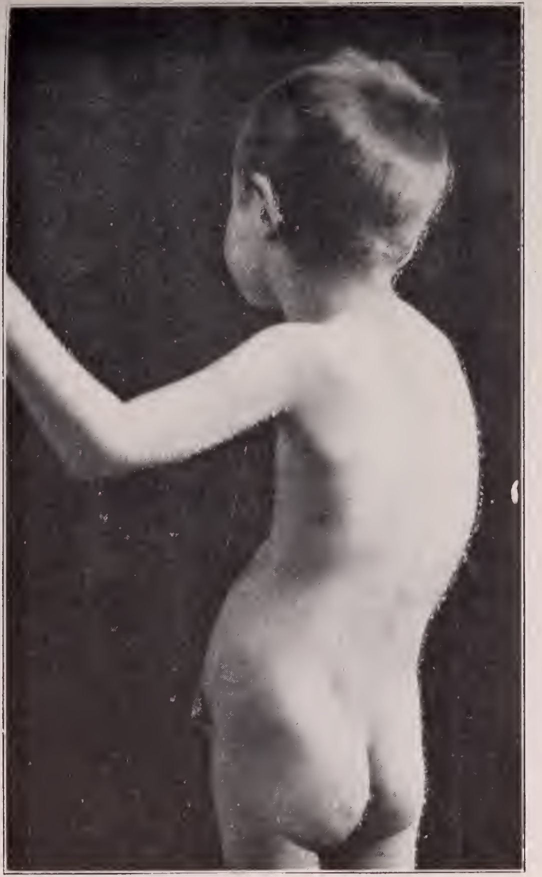
After the tendo-Achilles was lengthened and a support was worn he began to have use of the anterior leg-muscles, especially the tibialis anticus, which shows that part of this paralysis was due to muscular strain. His ankle has good motion and he walks on his foot without any support.



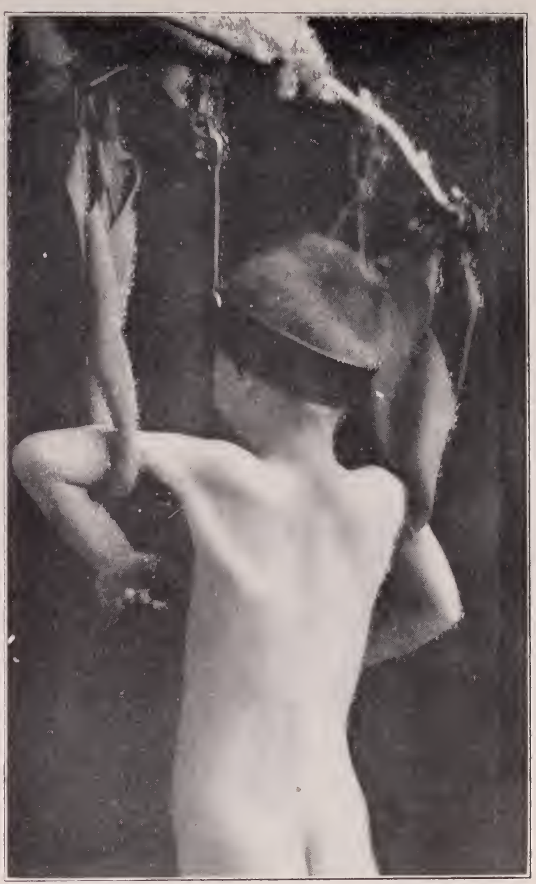
A case in which paralysis is confined to the quadriceps extensor muscles.



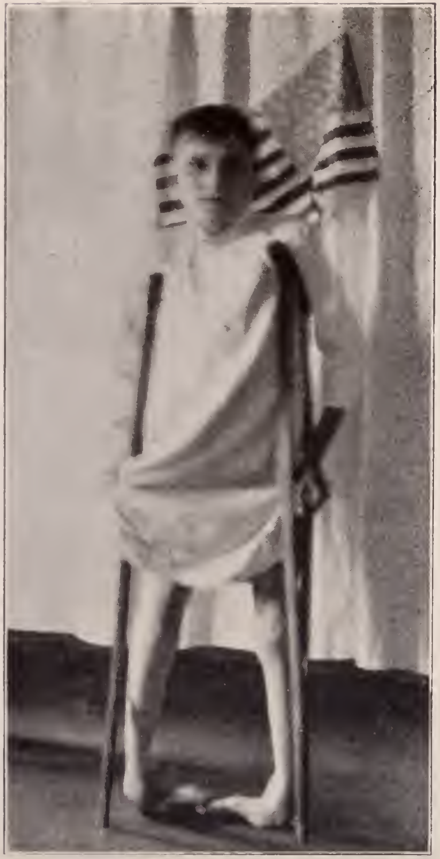
The leg is straightened, and a retention-brace put on. The brace must be worn for several years, or the deformity will return.



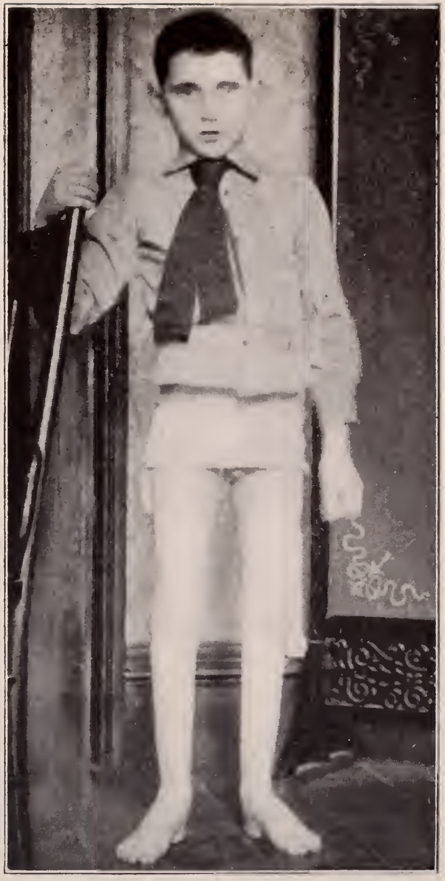
A case of posterior and beginning lateral curvature of the spine, due to infantile paralysis.



This shows the same child suspended in which a plaster cast could be adjusted and a leather corset made from it, to be worn when the child is up and about.



A case of paralytic club-foot.



The feet are straightened, but the deformity will return unless some simple ankle and foot support is worn for a number of years.

It is highly probable that these prevent the retrograde changes in the nerve-cells that would otherwise occur.

Dr. Emil S. Geist, (Minneapolis): I was very glad to hear Dr. Gillett's paper on this subject, for it is to the orthopedic clinic that, in the end, the majority of these cases go. I was especially glad to hear the doctor say that every deformity is preventable, or nearly every one. It is sad to see the cases that have gone practically without any treatment designed to prevent deformity.

In regard to the treatment of the acute stage, I do not think the doctor meant to convey any false impression as to our inability to find the germ, for we hope ultimately to find the germ for the anti-toxin that perhaps may be developed from it. A new feature in the treatment of the acute stage is absolute rest to the spine. It is the practice of Lange of Munich to give the spine complete rest by means of a plaster cast, and he thinks this benefits these cases.

Besides the brace-treatment there should also be mentioned the operative treatment in the chronic cases. A great many favorable results have been reported in cases in which operations, such as tendon-transplantation, tenodesis, arthrodesis, and tendon-shortening, were performed.

One should be careful to allow ample time (one to two years) to elapse after the acute stage is over before thinking of these operations, for Nature often works wonders in rehabilitating the paralyzed muscles. The operations should be designed to free our patients of braces, if possible. While a brace is a good thing, the orthopedic man tries to get his patient about without one rather than with one.

Another point which I think was not touched upon, is, that we are very likely dealing with something in the nature of a contagious disease. Reports have been made in sufficient number to make this appear plausible.

I would like to suggest that in the isolation of these cases there is nothing that will interfere with the treatment; and the spread of an epidemic may possibly be further limited by taking care of the nasal secretions of the patient. It has been shown by Flexner and Lewis that infection is exceedingly easily transmitted from the nasal mucous membrane of the patient to the nasal mucous membrane of the healthy individual, at least in monkeys.

TUBERCULOSIS IN CHILDREN: SOME ASPECTS OF THE PROBLEM.*

BY
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The prevalent popular conception of tuberculosis must be changed. It is regarded as a very fatal disease; indeed, one is not infrequently asked whether patients with consumption ever do actually recover. As a matter of fact, tuberculosis, in view of the number of people infected, must be considered as a disease of rather low mortality. Its insidious symptoms ordinarily hide the early stages and aborted cases. It is undoubtedly the most wide-spread of all parasites dangerous to human life, and its death-roll is unequaled. Still the great majority of persons infected recover, as shown by post-mortem statistics.

There is ample clinical and experimental evidence in favor of the latent infections of prolonged duration. As Von Pirquet says, "The whole adult pathology of tuberculosis is a chronic process, reinfection or terminal stages, the beginning of which must be referred to childhood." If it is true that the majority of people are infected before the age of fourteen, then the study of the early stages must be made in childhood. It is the study of these early stages and of the course of fatal cases which is to lead us to a more effective campaign of prevention.

Incidence and Age Distribution.—In 1131 autopsies on children under three years of age at the Babies' Hospital in New York, Wollstein found 185 cases of tuberculosis. This made 11.4 per cent. of the cases studied. Of these, 11 per cent. were infants under one year, 35 per cent. between one and two years, and 27 per cent. between two and three. These figures are fairly typical of other series published abroad by Orth, Heubner, Hamburger, and others.

Shennan reports from Edinborough, 1085 autopsies on children up to thirteen years, and of these, 421, or 38.8 per cent. were tuberculous. In nearly one-half of those cases (44.8 per cent.) death was due to meningitis.

The number of deaths due to this disease, however, by no means represents its prevalance. Thus in Vienna Von Pirquet found 90 per cent. of hospital children reacting to his test. These, however, were sick children from poor families in a city where tuberculosis is so prevalent that all over Germany it is recognized by the term "Wiener Krankheit." In 1907, Lowman found in Cleveland that 20 per cent. of 500 school children gave evidence of infection, and Roux, in Paris, found 40 per cent. In 2295 school children in New York, tuberculosis was found in 29 per cent. Dietrich, of Berlin, from a recent analysis of Prussian statistics, reports that there are a greater number of actual deaths from tuberculosis in the first year of life than during any other period. He further states that while the general death rate from tuberculosis has decreased 20 per cent. in twenty years, the infant rate has increased (Bonney). These figures show, without a doubt, that tuberculosis in childhood is common, and in the first year of life is very fatal.

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*Read at the forty-fifth annual meeting of the Michigan State Medical Society, Bay City, Sept. 28 and 29, 1910. Published simultaneously in Michiagn State Journal of Medicine.

Heredity and Family Relations.—In spite of the fact that tuberculosis definitely transmitted from parent to child is almost a medical curiosity, the presence of a consumptive in the family is still the usual cause of tuberculosis in the child. Perhaps the most important diagnostic point is the demonstration of an infective agent to which the child was exposed. *So far as the infant is concerned, one should suspect tuberculosis in every illness when distinct exposure to that infection has taken place.* Careful inquiry will often develop the most astonishing lack of precaution to prevent the spread of the disease. Thus one child under my care at the Children's Hospital, with tuberculous pneumonia, had been the constant companion of a tubercular father until the latter s death. One of the father's amusements was to pass his pipe from his own mouth to that of the child. Other equally astonishing incidents are frequent. So great is the susceptibility of small children, that one rather expects them to be infected when occupying the same residence with an open case of tuberculosis.

Floyd and Bowditch, investigating conditions in Boston, found that of 1000 children giving definite signs of tuberculosis, sixty-seven per cent. had tuberculous parents. Miller and Woodruff, of New York, found that in 150 children of tuberculous parents, 51 per cent. were positively tuberculous. Many observations confirm the statement that the children in households sheltering patients are especially liable to infection with this disease. The question of heredity as regards a diminution of resistance to infection may be left for biologists to settle.

For us remains the fact of danger to the children of a tuberculous family and our duty of protecting those children so far as possible.

Distribution of Lesions.—Until very recently the most of the text-books have stated, and it has been generally taught, that pulmonary tuberculosis is rare under ten years of age, but the accumulation of series of post-mortems of children has shown this to be wrong. Thus at the Sixth International Congress, Wollstein reported autopsies on 185 tubercular children under four years of age in New York. These show that tuberculosis of respiratory origin is by far the most common type. Of the 185 cases, just seven could be called primarily intestinal. Medin found but six intestinal cases in 595 autopsies, Hamburger no cases in 335 autopsies. Clinical signs are very deceptive in these cases, as will be mentioned later, and it is the autopsy records that have done much to correct our ideas about these lesions.

In small children the lesions are wide-spread, in cases running a short course. Thus every series shows from 25 to 50 per cent. of deaths from meningitis. This is never primary, however, but usually secondary to a process in the chest. I have recently seen a case in which it followed tubercular glands in the neck. There were at no times any signs in the chest. No autopsy however, was done. The almost constant presence of lesions along the intestinal tract is not due to the fact that there are tubercle bacilli in the milk, but that they are swallowed in the sputum, as a small child never expectorates. A second reason for the wide distribution of lesions in small children is the great activity of the lymphatic system, and especially the activity associated with the growth of the brain.

In Wollstein's series of 185 autopsies the distribution of principal lesions may be summarized as follows:

1. Lungs, 185. Of these 41 cases had miliary tubercles only, 54 were miliary and cheesy modules, 51 cheesy pneumonia, and 39 had cavities. 2, bronchial nodes, 176; 3, spleen, 164; 4, liver, 157; 5, pleura, 147; 6, mesenteric nodes, 135; 7, kidney, 72; 8, mediastinal nodes, 38; 9, intestines, 50; 10, pancreas; 11, stomach, 4; 12, cervical nodes, 6; 13, adrenals, 5.

The predominance of respiratory forms of the disease is clearly shown by these figures. One is impressed, also, that with the lesions so widely distributed the immediate fatality of a case may be due to destruction of vital tissues incidently in some location quite remote from the main process.

Observers seem very largely agreed that the diagnosis of pulmonary tuberculosis in infants by means of physical signs alone is impossible. As children grow older, they of course approach the adult type. In infancy however, physical signs are suggestive only, and their presence or absence merely confirmatory of other evidence. As said before, the history of direct exposure should make one always suspicious of tubercular infection, whatever the symptoms. We now use the Von Pirquet test in infancy and the Calmette in older children.

Diagnosis.—While they have their limitations, one can rely on positive results of the Von Pirquet test under the age of two years as being certain proof of the existence of tuberculosis, except in the presence of measles. A child with measles will give a positive Von Pirquet before the eruption appears. The Calmette reaction should be applied with great caution. The eye should be carefully examined for signs of disease, and if possible, inquiries be made to show that at no previous time has disease of the eye of any sort existed. Tuberculous iritis is by no means uncommon in children, and this fact must be borne in mind. A distinct Calmette reaction means almost surely active tubercular foci. Negative reactions, however, should by no means be taken as strong evidence of freedom from infection.

Temperature has much less significance in the diagnosis of tuberculosis in children than in adults. Within two weeks I have had a child of two years (Marvin) who died with pulmonary tuberculosis. For weeks his temperature was within normal limits, although the disease was far progressed. It may be noticed, in passing, that this child was buried on the same day as his mother, both victims of the same disease. The X-ray should be useful in connection with the physical signs in these cases, but I have had very little opportunity to test this means of diagnosis.

Sputum can be obtained from an infant by irritating the pharynx with a piece of gauze and examining that part of the sputum clinging to it. In tubercular meningitis Dr. J. H. Synder, resident pathologist to the Children's Free Hospital (Detroit), has shown that by diligent search the bacilli can practically always be demonstrated in the spinal fluid. The presence of tuberculides in the skin is an important diagnostic point in general miliary tuberculosis in infants, as recently pointed out again by Tileston.

These tuberculides are frequently overlooked, as there may be only two or three on the whole body. They are small round slightly raised papules, at first red but later fading to brown. The crust is scaly and can be scraped off, leaving a tiny depression in the center. By teasing and staining the epithelium of this scale, tubercle bacilli may be demonstrated. I have shortly had a case showing these spots, and tubercle bacilli were easily found in the teased epidermis.

Prognosis.—Tuberculosis in infancy is a very fatal disease. One statistician places the mortality under six months at 100 per cent. Under two years it is still very high, and in children under ten years the mortality reported is about twice as great as in adults. This is very largely due, however, to the late diagnosis and lack of therapeutic effort, in my opinion. Goodall, (*Boston Medical and Surgical Journal*, September 15, 1910), has recently reported on the results of the sanatorium treatment of children at Stony Wold. One hundred and twenty children between the ages of six and fifteen had been discharged. The percentage of apparent cures was more than twice the rate in adults from the same institution, and of those discharged "cured" or "arrested" not one has died or relapsed since leaving the institution. This seems fairly conclusive that children with pulmonary tuberculosis react well to a sanitarium treatment, and that such treatment should be provided for them.

This idea has only recently found expression in buildings. Until this year, no especial provision for children had been made in the sanatoria in this country, although there was general agreement that it was needed. The state authorities of Pennsylvania and New York, however, are now building such pavilions, and the preventorium of the New York Charities Association, near Lakewood, is being planned on an elaborate scale. The Red Cross Society of Michigan, has recenly erected a pavilion on the grounds of the Sanatorium of the Detroit Board of Health for the special use of children.

I show the plans for a pavilion for children shortly to be erected for the Detroit Tuberculosis Sanatorium. Besides the rooms for beds, one small ward and five private rooms, there are *special provisions* for the children. The building can be closed and heated, so that in severe winter weather the patients may still be comfortable while eating their meals, dressing, etc. Room is provided for the constant presence of a nurse and a complete diet kitchen. The second floor has a central room surrounded by windows, which can be all or partly dropped down to the floor, giving a roofed pavilion. On either side is a roof-garden with a pergola. In this pavilion we hope to successfully treat and study tuberculosis in children.

Open-Air Schools.—A word about open-air schools. We as physicians can hardly do a better service for coming generations than to foster the idea of open-air schools and promote its realization. They have long since passed the experimental stage in Europe, and those in this country have proven a great success. Those of you who have personally experienced the stimulus of open-air sleeping can easily believe the statements of teachers, that the study hours of children in the open air are much more profitable than those spent in the ordinary close school-room. The universal eagerness and zest of these children has been a surprise and constant pleasure to their teachers. These classes have, as a rule, been confined to children found by medical examiners in public schools to actually have clinical evidences of the early stages of pulmonary infection. In Boston last year more than one hundred pupils attended school on the roof of what had formerly been a refectory in Franklin Park. The management of the school was under the Boston Tuberculosis Association, the City School Department furnishing the teachers and car fares, and the Park Department the building. The unused portion of a large building on the border of the great Franklin Park, in the suburbs of the city was found to be admirably suited for the purpose, and after some hesitancy on the part of the Park Commissioners—such is the fear of the word "tuberculosis" arouses—it was finally obtained for the purpose. A sunny room for the kitchen and dining room, a rest room, lavatories, and a school-room for stormy weather, were provided. Upon the spacious roof with its pergola a tent was placed for the children's desks, which was the school-room in ordinary weather, canvas curtains being provided for high winds. The stormy-weather room was rarely if ever used. Each child had a bag of water-proof canvas, lined with blanketing, fitted about the legs and up over the back. In addition each one had a thick ulster overcoat, warm cap and mittens, woolen stockings and Arctic overshoes. The home conditions were carefully supervised by a nurse, who also took the children to dental, eye, ear, nose or throat clinics for examination or treatment. A director and cook trained the children in hygiene and economics, and the director had general oversight of their welfare. The children were given three meals each day of nutritious food. The daily routine was as follows: On arriving at the school each morning, the children had breakfast, and then some attended to their exercises in the class-room, while others, for a short time, worked in the kitchen and dining-room. In the forenoon there were school exercises, with a recess, breathing exercises, play, and preparation for dinner. For an hour after dinner all the children rested in their sleeping-chairs. The afternoon was passed as in the forenoon, and after supper they returned to their homes. One of the scholars, when asked to give the reason why he liked the open-air school, wrote: "I like the open-air school, because I have grown stronger and healthier, also because I have gained six pounds."

Experience has demonstrated, as the results in the Boston school have shown, that many of these children fully regain their health and are enabled to return to the ordinary schools.

Similar schools have been now established in New York, Chicago, Washington, Providence and Brooklyn, and other cities in this country, and in Germany and England. "Every city," says the National Tuberculosis Association, "should provide at least one well-equipped school or special class-room of this sort for each twenty-five thousand population."

All the children have originally shown distinct physical signs in the lungs; but no advanced or well marked "open" cases are admitted. The expectoration in those cases that had any soon ceased, except for a little in the mornings, which continued a somewhat longer time. When discharged from the school they are still visited in their homes by the nurse, and taken to the Out-patient Department at regular intervals for observation and care. In every case their homes have been under the constant supervision of the Association's nurse, and have been improved hygienically during their attendance at the school, so that conditions are more favorable for a continued improvement in health.

In New York I visited a similar school conducted on an old ferry-boat moored in the East River at the Bellevue Hospital dock. A trained nurse is in attendance, and on the day of my visit one of the children suddenly developed a temperature and had been put to bed on a cot in the open air in a remote corner. It is perhaps needless to state that these schools are under close medical supervision.

Superintendent Martindale, of the Detroit Public Schools, has recently gone a step further and given orders that in good weather as many classes as can be accommodated shall recite out-of-doors. Just how this will work out remains to be seen, but it is a move in the right direction and such experiments should and will receive the cordial support of the medical profession. The important move now, however, is that children in the so-called "pretuberculous stage" have special provision made for them to attend school in the open air under careful supervision.

Teachers are said to be very frequently affected with tuberculosis. Professor Bronardel has stated that one-fifth of the teachers are tuberculous. In 1908 Dr. J. N. Harty, Secretary of the Indiana State Board of Health, investigated this question in his state, and found that tuberculosis was fifty-one per cent. more prevalent among teachers than the general rate.

In the world-wide campaign against tuberculosis the child has not received the attention which his importance, as we now understand it, demands. To this, France, owing to the influence of Professor Grancher of Paris, has been a notable exception, and her institutions for tubercular children are a model for the world. Professor Grancher says his appreciation of the importance of this work was due to a sentence in Pasteur's famous book on diseases of the silkworm, to the effect that to eradicate an infectious disease the sure way was to save the cocoon —a profound truth, indeed. Other nations have followed France in this respect, and in Sweden, for example, healthy children of tuberculous parents are placed in temporary homes to remove them from the danger of infection. In most of the continental countries, institutions in the country are provided for suspected cases from tuberculous homes.

Without in the least undervaluing the great worth of the efforts now in vogue in the conduct of the tuberculosis campaign, I still insist that the logical and hopeful point of attack is childhood. The universal attendance at school brings practically, all the next generation under the eye of public officials. Here is the place to work. Medical examiners in the schools might detect all frank cases and direct weaklings to schools primarily for health. This is by far the most hopeful stage for treatment. Again, the watchword of the modern campaign against tuberculosis has been "Education." *The place to educate is in the school.* Public lectures, exhibitions, newspaper articles, are good, and should be continued for the benefit of the present generation. But they are *negligible* in influence beside the deliberate, well-planned, thoroughgoing teaching of the public schools and this special teaching should by no means be confined to tuberculosis, but should include the general principles of infectious diseases.

This line of discussion could lead us far afield into the subject of modern common school education. I cannot pass the opportunity without expressing my conviction that some practical additions to the curriculum are very important.

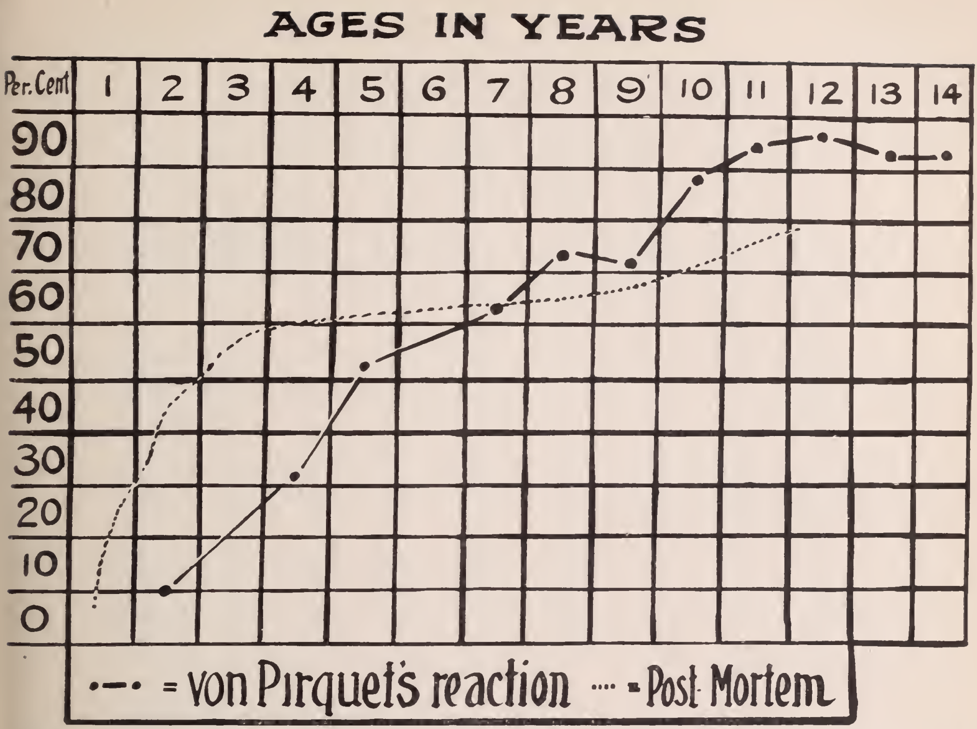
The Indian boy was taught to run, to swim, to hunt,—the rudiments of those arts which would enable him to protect himself from wild animals and other foes, and to furnish himself with food and clothing. The modern city child is in no danger from wild animals, but he is in danger on every hand from microscopic parasites. Is it not logical and necessary that he be taught to protect himself from them? This is one of the places when the modern school fails, and where we, as a profession, should insist that it advance to meet modern conditions and disseminate modern knowledge.

The accompanying charts (modified from Williams) show the substantial agreement (No. 1) between post mortem findings and tuberculin reactions in regard to the great prevalence of tubercular infection among children. The second chart concerns only children who have died of tuberculosis and shows the age at death.

Bibliographical Note.

The number of papers on this subject in the last few years is very large. The few references below indicate some interesting material, which contains many references to individual papers:

1. *Tuberculosis in Childhood*, by various writers. Edited by T. N. Kelynack, M. D., 376 pages, illustrated. Wm. Wood & Co., 1908.
2. *Tuberculosis in Childhood*, C Von Pirquet. Chapter in Klebs's volume on Tuberculosis (Appleton).
3. *Results of Sanatorium Treatment of Pulmonary Tuberculosis in Children*, Henry S. Goodall, *Boston Medical and Surgical Journal*, September 15, 1910.
4. *Proceedings of Sixth International Congress on Tuberculosis*, Volume II. Section on Children.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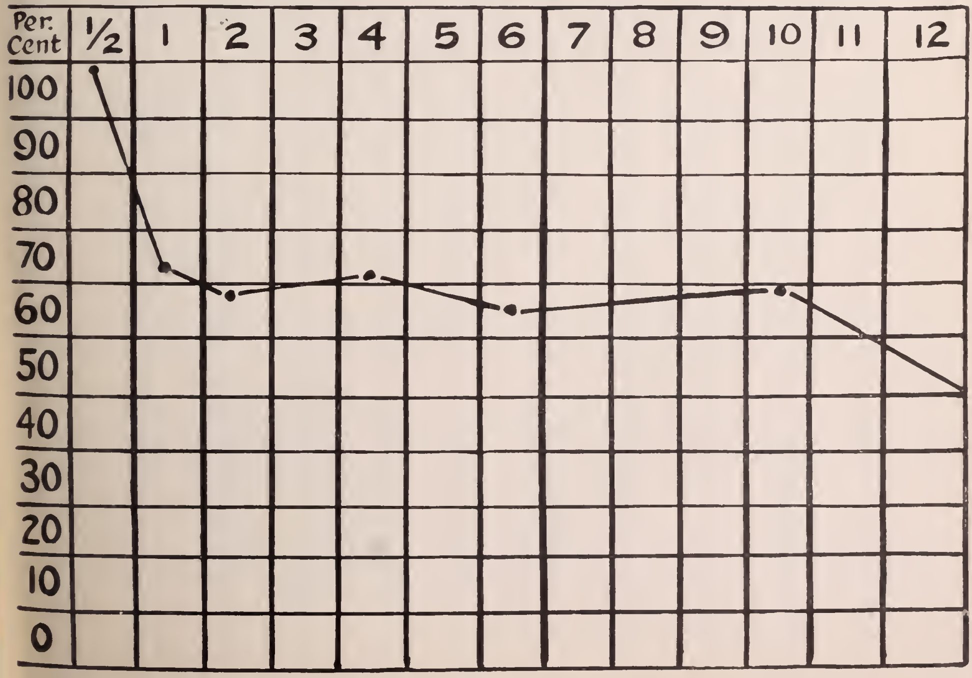
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MORTALITY

CASE OF ARRESTED HYDROCEPHALUS *

BY

EMMA ANTONIUS, M. D.
Brooklyn, N. Y.

Adolph A., born July 20th, 1906, after a prolonged labor, L. O. P., forceps delivery. He weighed six and one-half pounds at birth and was breast fed until eight months.

The parents are second cousins, both free from lues.

The mother was hysterical and greatly depressed during pregnancy. Since then her thyroid gland has been enlarging.

On the mother's side of the family is a history of tuberculosis. Her father, grandfather, great-grandfather and paternal aunt having died of pulmonary phthisis and two of her brothers have had pleurisy.

The father is strong, but when an infant his mother was asked by neighbors if the child had hydrocephalus, as he had such a large head. Today he still has a large head but well proportioned. He wears a seven and five-eighths inch, (19 1-2 c. m.) hat.

A brother of the father has a kyphosis, a cousin of the father (it happens to be also a cousin of the mother) died of brain fever (?) The parents of this last child were first cousins.

Another cousin of the father was said to have hydrocephalus, this child had an unusually large head but was very bright, when he died at the age of six years with diphtheria. A brother of this last child is below par mentally, he married a woman of the same mental caliber, but their children are normal.

Still another cousin had tubercular glands when a child and had "asthma" from childhood. Her children are tubercular.

The family is large but the remaining history would throw no light on this case.

Our patient nursed well after birth and seemed normal, but after the ninth day he cried very much, nothing particular was noticed until he was five weeks old. On August 26th he cried incessantly, staring look, the prominent eyes, with great bulging of the anterior fontanelle and marked retraction of the head due to the spastic condition of the muscles of the neck. It was almost impossible to overcome this rigidity. Two days

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*The case was presented at the Pediatric Section of the Kings County Medical Society, Jan. 25, 1911.

later, he did not cry while I examined him, he seemed brighter and noticed things held before him, the fontanelle was not quite so bulging, but the retraction of the head was the same as was the exopthalmus. On this day the measurements were:

Circumference of head around frontal and occipital protuberence, 38 1-2 c. m. (15 in.)

From root of nose over vertex to occipital protuberence, 24 c. m. (9 3-8 ins.)

Diameter root of nose to occipital protuberence, 14 c. m. (5 1-2 ins.)

Bitemp. diameter, 8 c. m. (3 1-8 ins.)

Biparietal diameter, 9 c. m. (3 1-2 ins.)

A diagnosis of hydrocephalus was made but on account of my trip to Europe at this time the case was turned over to Dr. Emily Lewi of Manhattan, who confirmed the diagnosis and treated the child until February, 1907.

Fig. I was taken at this time, but it does not show the retraction of the head, yet the other points are well marked.

Dr. Lewi prescribed five grs. of K. I. t. i. d., which was given until the patient was thirteen months.

The improvement in the child's condition was noticed in three weeks. He cried less and noticed more.

At seven months first tooth was cut.

At eight and one-half months was weaned on account of pregnancy in mother, but he seemed to get stronger after weaning. It was at this time that we noticed that whenever his wishes were crossed he would kick with his heels and screech at the top of his voice. The mother, thinking it was part of the disease, would try to humor him until her attention was drawn to it. After this whenever he attempted the performance his hands would be slapped with the result of checking the attack.

When one year old, he would get up from the floor by holding on to a chair or bed, but there was a peculiar spastic walk at this time. He seemed to make quite an effort at locomotion but he got there just the same. He had ten teeth at this time and would say "Udda," meaning himself.

When fourteen months old he took his first step alone. He had twelve teeth and says "Mamma."

At fourteen and one-half months walks alone but before each attempt he stiffens his legs and arms, and seems to concentrate his whole mind on walking, after he walked a few steps, the muscles seem to relax and he walks easily. He now has thirteen teeth. Is still stubborn and tries to imitate older folks.

At sixteen months had sixteen teeth, at eighteen months says "Papa," "Mamma," understands all that is said to him and by motions and inflections of his voice makes his mother understand what he means.

In October, 1908, (age two years, three months), he first had enlarged cervical glands with a temperature at times as high as 103 degrees. This would always be accompanied by acute catarrhal symptoms of nose and throat. From this time until April, 1910, he would have an attack of this kind, whenever exposed to a draft. He has had no attack since. (Since reporting this case he had a mild attack lasting only three days, usually they lasted one week.)

On August 26th, 1910, he was successfully vaccinated. He was quite ill three days and had a secondary rash.

He did not make any real attempts at speaking until he was about three years old, and then only because his little sister would repeat what was said. He speaks indistinctly and seldom gets the order of the words right. For instance he will say, "Oddi cold is," or "Oddi no bad boy is."

He knows certain initials stand for certain names and he does not make a mistake in them. A is his name, Adolph. D is for Dora, (his sister, whom he often calls Dolly or Lolly). J is his father's name, (John). M is his mother's name, (Maria). E. is for Tante Emma. T is for Tante Margaret. G. is for Grandma, etc.

He does not understand English, as he only hears Low German spoken.

The present measurements are:

Circumference of head, 53 1-4 c. m. (21 inches).

Root of nose over vertex to occiput, 33 c. m. (13 inches).

From ear to ear over highest point, 33 c. m. (13 inches).

Diameters, Bitemporal, 12 c. m. (4, 3-4 inches).

Diameters, Bipairetal, 12 c. m. (4, 3-4 inches).

Diameters, Occip to Frontal, 19, 1-2 c. m. (7, 3-4 inches).

He has not been stubborn during the past year.

As it was during the time that Dr. Lewi was treating the case that the disease was arrested, I wish to express my thanks to her for permitting me to present the case tonight.

108 Newell Street.

III-11 Months

I-6 Weeks

II-8 Months

V-4 1-2 Years IV

VITAL STATISTICS OF TWELVE TOWNS IN THE ISLAND OF CEBU, PHILIPPINE ISLANDS.*

For the Seven Years From 1902 to 1908.

BY

ISAAC W. BREWER, M. D.
Manila, P. I.

A study of the births and deaths in any country is of interest not only to the medical student but also to the sociologist. Unfortunately the records of births are rarely accurate. It is believed that in the Philippine Provinces the records are fairly accurate. Nearly all of the natives are members of the Roman Catholic Churches, and, as a class they are very religious, and would not think of omitting the rite of baptism. The fees from this source are one of the principal means of support of the local church, and it is reasonable to believe for this reason if for no other the number recorded would be as large as possible. I have several times compared the records of births and deaths kept by the municipal authorities with those kept by the church and have found that they agree very closely. General J. P. Sanger accepted this view of the matter in compiling the statistics published in his report of the Census of the Philippine Islands.

This subject was brought to my attention through a paper by Musgrave and Richmond on Infant Mortality in Manila. That communication showed that the death rate greatly exceeded the birth rate, and that the mortality amongst children under one year of age was something like 71 per cent. of the births. As these figures did not agree with the impression obtained from residing in the Provinces, an endeavor was made to collect information upon the subject by sending out circulars to all the towns on the Island of Cebu. Answers were received from but twelve mucipalities which form the basis of this report.

Cebu is a long, narrow island, traversed from south to north by a range of mountains of moderate elevation. The narrow coast belt of land is level and very fertile and most of the inhabitants dwell in the towns of this region. Their food consists of fish, corn, millet, rice, vegetables, fruits and an occasional meal of pork or beef. The quantity of rice consumed is much less than in many other provinces.

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The climate is hot, but the rainfall is more evenly distributed than in other portions of the Island. The precipitation is greatest from July to November, and least during April and May but there is generally sufficient for agricultural purposes throughout the year.

The Island of Cebu was the first portion of the Archipelago to be subjugated by the Spaniards. Magellan landed at the present city of Cebu in 1521 and was killed on the Island of Mactan, which is just opposite the city.

The data here presented cover the years from 1902 to 1908 inclusive. During that period there were 40,382 births, and the deaths were 18,887 or 47 per cent. of the births. This percentage varied greatly, being as high as 67 per cent. in some localities and as low as 22 per cent. in others. This percentage compares very well with that obtained by General Sanger from the records of the Religious Orders. He recorded 199,898 births on the Island of Cebu during fourteen years between the years 1876 and 1907, the deaths being 49 per cent. of the births.

It is difficult to find tropical statistics to compare with those presented here, but from the report of the Madras Presidency we are able to obtain the births and deaths for the years from 1906 to 1909, which show the deaths to be 78 per cent. of the births. In the City of Calcutta, as in the City of Manila the recorded births are less than the number of deaths. The register of vital statistics for the Philippine Islands, informs me that not all of the births in the City of Manila are recorded, but that the records from Cebu are much more accurate.

On the Island of Cebu the deaths of children under one year average about 9.8 per cent. of the births. The largest rate was 15 per cent. and the smallest five per cent. According to Albert, in Manila, the deaths of children under one year of age are 47.6 per cent. of the births.

An endeavor was made to ascertain the cause of this great mortality, but no accurate data upon the nursing of children could be obtained. A general impression was formed, that most of the mothers nursed as long as possible, nearly always until the end of the first year, but that they also gave the child boiled rice and other foods at an early date. When a mother is unable to nurse her child she resorts to canned milks of various brands, generally the condensed milks. Sometimes rice gruel is used and the milk of the coconut and tuba, a drink made from the sap of the coconut tree are not infrequently made to take the place of milk.

The various departments of the Insular Government are endeavoring to improve the condition of the Fillipine people in every way possible but the field is so large and the workers so few that it will be a long time before much improvement in the death rate can be expected.

One of the greatest desiderata is physicians. In Manila and a few of the larger towns there are physicians, but in the smaller towns and the rural districts there are none. On the Island of Cebu, with a population of over 600,000, and a density of population of 337 per square mile, there are no physicians excepting in the town of Cebu. A large portion of the inhabitants of the Island are born, live and die without ever having the services of a physician. Here and there Americans have established small hospitals, but there is a great field for more. The expense will be slight compared with the great returns to be had. If some of the money which now goes to China and other Asiatic countries for hospitals could come here the returns would be as great if not greater. An enthusiastic physician, with a few nurses at his command, could, if located in a provincial town, do more to elevate these people than any other worker. It is hoped that some of the philanthropic people of our country will look into this matter and help us. Any of the churches that have been established in the Islands will gladly undertake the work, but it would be best to conduct it on a non-sectarian basis.

ADDRESS OF THE PRESIDENT OF THE NEW ENGLAND PEDIATRIC SOCIETY.*

JOHN LOVETT MORSE, A. M., M. D.
Boston Mass.

It seemed to me that it would be of interest at the beginning of this, the fourth year of the New England Pediatric Society, to review rapidly the past history of the Society and to plan a little as to the immediate future. The Society was founded January 4, 1908. The original members numbered between 40 and 50. The membership at the end of the first year was 93, at the end of the second year, 109 and at the end of the third year, 122. This number is large enough to make a flourishing society. It would be better, however, if we had twice this number. We can easily have it, if the individual members will aid the officers in getting new members. In the past this matter has been left almost entirely to the officers who have done yoeman service. If every member would get to work and bring in at least one new member, the size of the Society would quickly be doubled. Personal solicitation is very important in this connection ,as nobody ever pays any attention to a general invitation. It would seem as if there was a large field for this Society in New England, because the subject of Pediatrics is one which should interest him almost as much as it does the specialist, since a large part of every general practitioner's work is among children.

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*Delivered before the thirteenth meeting of the New England Pediatric Society, January 20, 1911.

The average attendance in 1909 was 36, or 33 per cent. of the membership, while in 1910 it was 36 or 29.2 per cent of the membership. The smallest number at a meeting last year was 23, the largest 50. This is not a bad average. It ought to be better, however, when the standard of the meetings is taken into consideration. This standard is very high, fully up to that of the meetings of the national societies. There has been no meeting since the foundation of the Society which it would not have been profitable for everyone, whether a specialist or not to attend.

The standard of the meetings, is, as I have already said, very high. It is not so high, however, but that it can be improved. It would be hard, nevertheless, to raise the standard of the papers as they are already so good. There are certain suggestions, however, regarding the papers which I think would improve them. One of these is that a short paper is always more interesting and instructive than a long one. There are often many details which should be published but which are tiresome and are better omitted when a paper is presented to the Society. Another suggestion is that papers are always more impressive and more interesting when they are spoken than when they are read. This method of presentation is, of course, harder than the reading of a paper, but the gain in interest is well worth the additional trouble. It is always well to remember that the details of cases, and especially pathological details are always tiresome and usually unnecessary, and that they can be printed and read later at leisure. It is impossible, also for a listener to grasp long series of figures or statistics. They should be presented in the form of tables or only the main points given.

The discussions have not been free enough in the past. The members have apparently been afraid to talk freely for fear that they would hurt somebody's feelings if they disagreed with them. This seems to me to be entirely wrong. As competition is the life of trade, so free discussion is the life of a medical meeting. Everyone ought to be man enough not to be offended when someone disagrees with him in a medical meeting and not to carry away any ill feeling from the meeting.

It has seemed to me that rather too much time has been given in the past to the reading of papers and too little to the presentation of patients, pathological specimens and short case reports. I feel sure that all of these matters would be of interest and add variety to the meetings.

It would be a great help to the officers if the members would volunteer to present papers, patients or specimens, and not leave it entirely to the officers to drum them up.

The Constitution says that three or more meetings shall be held annually. Four meetings have been held in each of the last two years. I hope that it will be possible to hold more than this during the coming year. Whether it will be possible or not depends of course on you, that is on whether you are willing to provide the material for the meetings. With your assistance we can have more meetings and better meetings. Without it we cannot.

The Coloclyster.—The purpose of the coloclyster is to introduce a large amount of liquid without over-distending the bowel. With the patient on his back not over three pints can be passed into the colon safely, but in the knee chest or Sims position six or seven pints may be injected without inconvenience. This is especially valuable in the treatment of pseudomembranous colitis, catarrh of the cecum, atonic and chronic dilatation of the colon when they complicate neurasthenia in intoxication, and in collapse and shock.

Rectal Irrigation.—The chief advantages of irrigation over the enema is that a flushing may be given the parts. The first water introduced may be about the body heat and the latter rapidly heated or cooled as required to obtain the therapeutic results without causing sudden shock to the surrounding tissues. Hot irrigation of the rectum and sigmoid is useful in inflammation of these structures or surrounding tissues, in rectal ulcer, spasm of the sphincter, and in some gynecological affections. The water should be 100 to 125 degrees F. beginning at 100 and raising to 125 degrees. Normal salt solution (salt one dram to water one quart) is better than plain water to relieve local irritation.

SOCIETY TRANSACTIONS

New England Pediatric Society.

The 13th meeting of the New England Pediatric Society was held January 28th, 1911, at the Boston Medical Library.

Dr. John Lovette Morse in the chair.

The following papers were read:

(1) President's Address. John Lovette Morse, A. M., M. D., Boston.

(2) "When Shall We Remove Tonsils and What Type of Operation Shall We Do?" Eugene A. Crockett, M. D., Boston.

(3) "What is to be the Attitude of the Pediatrist and the Orthopedist in the Treatment of the Child with Congenital Ptosis of the Abdominal Viscera?" Joel E. Goldthwait, M. D., Boston.

(4) "Silver Nitrate Irrigations in the Treatment of Infectious Diarrhea in Infants." Richard M. Smith, M. D., Boston.

When Shall We Remove Tonsils and What Type of Operation Shall We Do?—Dr. E. A. Crockett, Boston, read a paper with the above title.

Enucleation of the tonsil is an operation with considerable risk and in unskilled hands will show a higher mortality than an abdominal operation for an interval appendix in the hands of a good surgeon. Dr. Crockett then drew attention to the fact that there have been twelve deaths in this city and its suburbs in the last two years, following the removal of tonsils. He, therefore, urges that this operation should only be performed by the skilled surgeon. Operation should not be performed without due deliberation and definite indications. During the operation remember the surgical landmarks of the throat. Remove the tonsil by careful blunt dissection and having operated treat the patient as a serious case for the next three or four days. Do not operate unless you are able to meet all the necessary emergencies which every surgeon must expect to have occasionally. If these rules are observed the operation will be undertaken with a minimum of bad results and a maximum of success from the standpoint of the patient and will not be so generally performed as at present.

Dr. Green: Dr. Crockett's paper.

I think Dr. Crockett's very interesting paper is worthy of commendation in many respects. There are a few points which it seems to me should be emphasized and the chief one of them is the consideration of the shock and liability to hemorrhage from the operation of enucleation in adults as a reason why the radical method should be undertaken, in adults especially with due deliberation and care. I feel perhaps a little more strongly than does Dr. Crockett about the importance of complete enucleation. The reason why the radical enucleation operation has come into vogue is that the results of partial operations in the past have been unsatisfactory, leading to a recurrence of the symptoms for which operation was done and frequently making a second operation necessary.

If one examines a large series of cases in which partial operation has been done and compares this with a series where complete operation has been done, the end results will be found to be strikingly in favor of the latter. The last word in the matter of technic of tonsil operations has not yet been said. The ideal type of operation in my opinion would be the most complete operation with the minimum of shock and hemorrhage.

Dr. Rotch: Dr. Crockett's paper.

I wish to especially draw attention to the importance of operating upon enlarged tonsils and adenoids where they are evidently a cause of delayed development, especially of the thorax but also when affecting the general condition of the child.

Dr Lane: Dr. Crockett's paper.

I remember that once when the Director of Hygiene in the schools of a neighboring large municipality came out to Milton to speak before a society which was interested in the welfare of the schools there, he asked me if there was anything I would like particularly to have him speak about and I suggested adenoids and tonsils. In the society were parents who had gone to their physicians for advice regarding the removal of tonsils and presumably adenoids in their children, and I am sorry to say that the Director brought up the subject only to speak of the influence which fresh air and sunlight had upon the growths and tonsils and as opposed to operation which to my mind was distinctly detrimental to the health of the children.

The specialist has to rely somewhat for the previous history upon the general practitioner who has seen the child with repeated attacks of tonsilitis although at the present time the tonsils may be normal and there are apparently no indications for removal.

Dr. Goldthwait: Dr. Crockett's paper.

It has been my good fortune to see a good many tonsils removed in cases with rheumatoid joint conditions and one thing which has impressed me is that if the tonsils are to be removed with the idea of removing the source of infection they should be very carefully enucleated. I have seen several cases in which the tonsils were supposed to have been removed where there was enough of the substance remaining to make subsequent operation necessary. In cases in which the patients have not had much quinsy and much local signs of inflammation, accumulations of pus have been found which have been a very striking and a very distinctive feature in the joint conditions It seems to me, and it has come to be my advice in speaking to patients about these conditions, that if the operation is to be performed for the removal of the tonsils to eradicate a means of infection, it should be a complete enucleation.

Dr. Morse: Dr. Crockett's paper.

There are just one or two words that I want to say on the subject. I do not believe that the tonsils are the root of all evil, but do think that a good many things come from the tonsils and to those which have been mentioned I would add nephritis as a sequela of tonsilitis. In young children enlarged tonsils often interfere so much with deglutition that they take their food very poorly and have their nutrition very much disturbed on this account. There is one question which is often asked me which I wish Dr. Crockett would answer: If a young child's tonsils are removed will it interfere with the development of a proper singing voice in after years?

Dr. Eastman: Dr. Crockett's paper.

I have seen two cases in the past year in which the tonsils were removed, in both instances the removal effected with the tonsillotome and several months later as a result of this method there was an infection resulting in glands in the neck. I cannot see any objection for complete removal of the tonsils even in a child.

Dr. Crockett: In closing.

I think that in reading a short paper on a long subject one's position is likely to be misunderstood. There are many cases which present no history pointing to the tonsils. The class of cases which present a rheumatic history, a history of tubercular glands, a history of repeated obstruction, diseases of malnutrition caused by insufficient breathing space, those are indications for removal, those cases all need enucleation. In very many cases removal of the adenoids is sufficient, and if I saw a case with large adenoids and small tonsils I would prefer to remove the adenoids and do my enucleation at a second operation if necessary, but in cases which present a clear history of infection from the tonsils, remove all that there is and do not leave any at all. Enucleation is a big operation and should not be attempted in a suburban town away from one who is competent to do it. If the general practitioner wishes to do an enucleation then let him get his patient near to the specialist, make all the necessary preparations and be prepared to meet the hemorrhage if it occurs. This is what one must always be prepared for. You can see it right down at the Eye and Ear Infirmary every day. I have been connected with the Infirmary for twenty-one years, and I suppose we do 600 or 700 operations a year; up to the year 1906–1907 I do not remember a single case of hemorrhage. Now I never finish a three months' service without seven or eight hemorrhages and they are bad hemorrhages; they are fully as bad as an obstetrical hemorrhage, and if you do not go down and do something pretty quick you will find a funeral when you get there. Now this is the point which I particularly wish to make. It is a form of operation which should not be entered into lightly, and one which should not be done twenty-five miles out of town; it is a hospital operation and a serious one, and if it is done with care by the proper man it is all right. I do not mean to say that the specialist is the only one who can do the operation, but I do not think that the medical man is the man fitted to do it; it is a critical operation and it is not applicable in all cases of tonsil hypertrophy.

As to the effect on defective speech after removing the tonsils it has been my experience that in cases of stammering, the condition is a mental one. It is a habit and is better treated by the nerve department and I should think that operation would absolutely fail to improve it. The thick speech which tonsils and adenoids produces would be helped by removing the adenoids. Dr. Jelly has brought me quite a number of children from his class of backward children in the public schools and in all cases, almost without exception the difficulty was a nervous or mental thing and not at all referable to the condition of their throats, and another thing to be considered is that children imitate very readily.

I think that removal of the tonsils even in the singers' voice will probably improve the voice but it will disturb their methods which is an important matter if the voice has already got its training, but the removal of tonsils in young children will improve the conditions and not do any harm at all. In rheumatism with an endocarditis I would not hesitate at all to do an enucleation. I would not remove the tonsils in the acute attack that is in the height of the rheumatic process with temperature and acute infection. I have seen it done a number of times but my own feeling is that it always increases the septic process and the child is longer sick than usual. In the same way in a patient with glands in the neck I would rather delay the operation until after the acute process is over.

What is to be the Attitude of the Pediatrist and the Orthopedist in the Treatment of the Child With Congenital Ptosis of the Abdominal Viscera?—Dr. Joel E. Goldthwait, Boston, presented the above subject.

He said that anatomists have shown that one out of every five persons have a long mesentary to the transverse colon which allows a congenital ptosis of the same. This caused the person to take characteristic positions and resulted in impaired nutrition. A series of Roentgen ray plates were shown which illustrated this condition. He then told how mechanical support could overcome ptosis.

Dr. Talbot: Dr. Goldthwait's paper.

The plates which Dr. Goldthwait has shown us are very interesting and instructive. I have seen one or two such children and I have an X-ray plate similar to the ones just shown of a boy whose only complaint has been constipation. This boy had a ptosis of the transverse colon with a kink about half way up the descending colon. The ascending colon must have had a long mesentery because it was doubled up. A series of purgatives were tried without improvement. He was then put to bed with the same result. His stools were examined for the different food components (meat starch and fat) and it was found that his digestion was normal. He was therefore, given his caloric needs in foods which left the smallest fecal residue, that is, oats, sugars, fats and eggs. His abdomen came down about six inches in about two weeks. The whole clinical picture was a boy who was uncomfortable when he came in, having persistent constipation and on going out he was a comfortable youngster who did not look particularly abnormal. Unfortunately, we did not get an X-ray to see what happened after he got a smaller food residue than previously. I think that treatment from the point of view of diet is equally important as the mechanical treatment.

Dr. Craigin: Dr. Goldthwait's paper.

The point in diet which Dr. Talbot brought out interests me. Some of the men who have been treating these cases advocate the use of bulky foods to clear out the large intestines. I recall many young children of this anatomical type who had been fed largely on crackers, bread, potato and cereals. They imporved immensely on cutting down the bulky foods and giving eggs, meat, fat and sugar.

I would like the opinion of others on the use of bulky foods. It is not liable to aggravate the faulty mechanical condition?

Dr. Greene: Dr. Goldthwait's paper.

I would like to ask if this type of ptosis can be present without causing any symptoms in the child, or whether this form always causes symptoms; can the child be a perfectly healthy one and yet have the conditions?

Silver Nitrate Irrigations in the Treatment of Infectious Diarrhea in Infants.—Dr. Richard M. Smith presented a paper with the above title.

He said that a solution of three per cent. silver nitrate had been used at the Boston Floating Hospital last summer in treating both the acute and chronic cases of infectious diarrhea. One pint of the solution was injected after the colon had been cleansed with a sterile water irrigation. In some of the cases an early injection apparently hastens the disappearance of blood from the stools and shortens the course of the disease. In some late cases where blood and pus persist in the movements the ulcers can be stimulated to healing by silver nitrate injections. Since no harm has followed the use of silver nitrate injections and benefit has been received it would seem worth while to give this means of treatment a further trial.

Dr. Rotch: Dr. Smith's paper.

This work, which has been done at the Floating Hospital, as reported by Dr. Smith, is extremely good and should induce physicians to make trial of it during the coming summer. It will probably be especially valuable in the more chronic forms of cases where actual lesions are present. This special means of treating cases of infectious diarrhea will, I hope, prove to be a most effective part of the general specific treatment which has lately been evolved in the bacteriological study of these cases. By what is called infectious diarrhea we understand a condition which is produced by organisms which penetrate the tissues. In this class of diarrheas, therefore, we have to deal not only with disturbances which are produced within the intestine but also outside of the intestine in the tissues. We also have to deal with local irritation of the bacilli within the intestine and a production of toxins, also with the effects produced by the absorption of these toxins and the destruction of proteid material in the tissues, thus interfering with normal metabolism. It seems probable that the character of the infecting organisms in respect to their work upon the proteids in the intestine may be changed by the giving of carbohydrate food and in this way lessening the production of toxins. For this purpose lactose can be given by the mouth, following the local treatment with laxatives and irrigations. It has also been proposed to give infusions of dextrose in order to restore to the blood the sugar which has been used up by the body during the starvation treatment, as the most available form of energy. Considering how meagre and inadequate our treatment of these cases has been in the past I think that it is encouraging to at least feel that we in the near future may have three forms of specific treatment,—by mouth, by the rectum, and by the infusion of dextrose.

Dr Bowditch: Dr. Smith's paper.

I am very glad to hear what Dr. Smith has to say about this treatment and think this procedure an excellent one. There is one thing I would like to have him tell us, and that is whether any post-mortem examinations were held on these patients which allowed him to see how far the silver nitrate penetrated. Another question is what was the amount of the irrigation that he used? My own feeling is that the chronic cases are the ones which are more greatly relieved. I have seen one or two cases, in which after ten days' duration, with a certain amount of prolapse, one injection of silver nitrate, of about eight ounces, was sufficient to stop all subsequent mucousy, bloody movements and make them perfectly normal. If we can help a child in that way it means a good deal to the further rapid convalescence of the case.

Dr. Praino: Dr. Smith's paper.

I would like to ask if Dr. Smith has ever used argyrol in this connection? I have tried a five per cent. solution in a few cases and the results obtained were almost miraculous.

Dr. Jordon: Dr. Smith's paper.

I was very glad indeed to listen to Dr. Smith's paper as this subject is of interest to me. I have seen a good many of these diarrheas in the last two years and the use of silver nitrate solution in the bowels is something that I would not myself have tried without first hearing the reports that I hear to-night. Dr. Bowditch just spoke of something which I wish to touch on also. We do not know just how far the silver nitrate is going to penetrate or what harm it is going to do. To illustrate this point I will cite the case of a man who was coming to my office for treatment of a finger and as it was not healing quite fast enough, I tried the five per cent. silver nitrate solution to stimulate fresh growth, telling him to return the next day. He did so and I was surprised to find that the previously healthy granulations had all broken down and I had a very large ulcer there, so I wonder if the nitrate of silver may not do the same thing to the colon. I have two cases in mind which came to St. Joseph's Hospital on my service there last summer, a boy and girl from the same family. The boy was *in extremis* when he came into the hospital. He was having anywhere from 30-40 stools, all of them foul with blood, mucus and pus and Dr. Dwinnell took a smear on a sterile towel with the intention of making an autogenous vaccine, and the smear showed so many different forms of bacteria that he was the greater part of a week trying to isolate anything which we felt safe in using and by that time the boy began to improve. The treatment in this case was colon irrigations and an ounce of castor oil every three hours kept up for four or five days, and elimination of the food with the exception of water and buttermilk. The sister was not as badly affected and she improved much more rapidly than the boy; but what I wanted to speak about particularly was the action of the nitrate of silver on these ulcers in the colon, and where we know so little about it, these reports would give encouragement, and I am very glad to know that the results were so good.

Dr. Lane: Dr. Smith's paper.

I would like to speak of the use of the silver nitrate solution in two cases of infectious diarrhea, which we formerly called dysentery and is characterized by tenesmus and mucus, pus and blood in the stools, that occurred in my practice last spring shortly after Dr. Hewes' report of his results with a five per cent. solution. In these two cases in which I used it early, before the fourth day of the disease, the bacterilogical examination later disclosed the proteus bacillus as the infecting organism. One child, three years old, had twenty-one stools in one day after which I tried the five per cent. solution of silver nitrate, eight ounces, injecting it high after cleansing with warm water. There was no evidence of pain but she did not retain even the eight ounces, as a part, perhaps two ounces, was immediately expelled. Afterwards the characteristic appearance of the stools was such as Dr. Smith has described with the exception that the number was increased, there were twenty-four in the next twenty-four hours, odor was foul and the tenesmus more severe. As there was no improvement after forty-eight hours I did not feel that one application was a fair trial, I repeated the irrigation with the same results. The other case showed a similar lack of improvement under the silver nitrate irrigations and I was staisfied that the treatment did no good. I should hesitate to use it again.

Dr. Morse: Dr. Smith's paper.

I have not used this silver nitrate irrigation in any of the acute cases of diarrhea but have in a small number of chronic ones and my feeling is that most of them have been helped to a greater or less extent, some of them a good deal. I certainly have been favorably enough impressed with the results that I feel that next summer this is one of the things I shall try more regularly than in the past.

Dr. Smith: Closing the discussion.

As to the question of post mortem findings, in the cases to which I referred which proved fatal we were unable to get autopsies, so I do not know how far up the colon the silver nitrate penetrated. I am sure that none of the patients on the Floating Hospital were in any way harmed by the treatment. None of them seemed to be worse after its use. The cases which Dr. Lane has referred to are of value in a discussion of this sort. It is one of the points I tried to bring out, that since no harm is done by this treatment, it is perfectly fair to try it in a greater number of cases of summer diarrhea for we stand a reasonable chance of quickly relieving the condition. I have not tried Argyrol in any of the cases. I have seen a favorable report of its use by some one else. Dr. Bowditch asked about the amount of the irrigating fluid. In all cases we used a pint of silver nitrate solution following a preliminary cleansing irrigation.

Michigan State Medical Society.

Discussion on Tuberculosis.

Dr. Victor C. Vaughan, Jr., Detroit.

The paper of Dr. Rich is not only very interesting, but very instructive, and he has certainly presented the subject in a way which is both clear and concise. The chart showing the occurrence of tuberculosis at the different ages is especially instructive. It gives us a very good clue as to why the Von Pirquet reaction is of little or no value after the age of early childhood. Practically every one who has passed this age has at some time or other become infected with the tubercle bacillus, and although for all practical purposes they are well people, still they have been infected to a sufficient extent to react to this very delicate and sensitive test. The Calmette test, not being so sensitive, is of value after this period.

I was glad to hear the Doctor state that pulmonary tuberculosis is more common in children than is generally supposed. I was led to think that I could find tuberculosis where it did not exist. In connection with my work with the Board of Health in Detroit, we have had occasion to examine a great many children of the poor families, and we have found them infected with tuberculosis to an appalling extent.

Whereas the results of physical examinations are somewhat doubtful and dubious, owing to the characteristics of the breath sounds in children, still certain children did show signs not only of consolidation, but also of cavities which were apparent on very superficial examination. We have taken as a rule children of tuberculous parents, having subjected them to the tuberculin test. If they reacted positively, they were transferred to the hospital for a period of observation, and without exception these small children have shown clinical evidence of active tuberculosis, as indicated by a temperature of 99 1-2 degrees to 100 degrees, by rapidity of the pulse; both usually combined at some stage during the day. My experience has been that these children do remarkably well. We have children who have been in the hospital two years ago, and now to all appearances are well, no temperature, and have done much better than adults, who have died under similar circumstances. The charts are very interesting, particularly when we compare the mortality chart with the Pirquet reaction chart as showing the very probable development of immunity in the tuberculosis subject.

Dr. J. H. Dempster, Detroit:

I would like to ask the author of the paper about the Moro test. It seems to me that it is a very convenient test to apply, and I would like to hear his opinion as to the relative value of this compared with the Von Pirquet and the Calmette tests.

Dr. Johann Flinterman, Detroit:

I had occasion some time ago to see a child who was suffering with muscular dystrophy. The child was twelve years old, and very weak. It was necessary, on account of the condition of the child, to confine it to the house in the winter. A physician was not engaged to keep that child under observation, and it did about as it liked. I was called to see the child when it had a temperature of 99 degrees in the evening, and perhaps 99 degrees in the morning. I made a very careful examination of the respiraroty organs, and I confess that I was unable to find anything to indicate that this child was suffering from tuberculosis. The child commenced to grow weaker, respiration was very frequent. The child was afraid to stay in her room, and couldn't go out at all. The temperature in the evening would rise sometimes to 103 degrees, and be in the morning 98 degrees. I called in another physician with considerable experience in children's diseases, and he concluded that my diagnosis of incipient tuberculosis was wrong. The child became worse, and finally died of tuberculosis. It is a fact that these people will suffer with this peculiar muscular affection, and die finally with tuberculosis. There was no tuberculosis in this family on either side. The mother of the child had one sister die when she was two years old. In reading the literature, I find that all cases of muscular dystrophy were of this same kind. We do not know at the time where the cause is to be sought, but if we investigate the cases, and at the time the diagnosis is made take the whole clinical picture, we will never fail to see that it is tuberculosis.

Dr. T. M. Koon, Grand Rapids:

I am not just clear in my mind as to the line of demarcation which the Detroit doctor made in the use of the two tests, but as I understand it up to ten years of age the Von Pirquet test is perfectly reliable, but after ten it is too sensitive. Then we switch off upon the Calmette. I have used in the last two or three years the Von Pirquet test quite extensively. I have now in the State Sanitarium six patients that I sent there, upon every one of whom I used the Von Pirquet test. The symptoms, the early history of the case, and the findings in each case, pointed to the individual having tuberculosis. On top of that I gave the Von Pirquet test. They reacted. I felt safe in concluding that I was dealing with cases of active tuberculosis. Last winter Dr. Ravenel and Dr. Knopf were both in Grand Rapids. I asked them about their views in regard to the Calmette test, and they both said that it should be considered dangerous.

Two years ago I was working in Brompton Hospital, England. I talked to a number of the men there, and almost invariably they said that they considered the test dangerous, and advised against its use; so that it seems that there is a wide difference of opinions in regard to the Calmette test. It seems to me that if the test is reliable in children up to ten years of age, that if we get a case in an adult, the history of the case and findings all pointing to tuberculosis, and we get the Von Pirquet reaction, then we are justified in concluding that we have a case of tuberculosis.

Dr. John H. Crosby, Otsego, Michigan:

Along the line of the value of the Von Pirquet test for tuberculosis, I might say that I inquired of the German pediatricians, Finkelstein and Huebner and Langstein, their idea of the value of the Von Pirquet test, and they all said that the Von Pirquet test was of value up to six months of age. If you get a positive reaction up to six months, you can say the child has active tuberculosis. After that you can simply say the child has active tuberculosis, or may have had active tuberculosis. It does not signify that the child has an active tuberculosis at the present time, if over six to eight years of age it gives a positive reaction.

I might say that the only positive contra-indication for breast feeding in children is tuberculosis in the mother. If the mother has tuberculosis, then it is a crime to feed the child from the breast of this mother. There is a classic example of a pair of twins that were born, one child removed from its mother, and the other child nursed by its mother. The child that was removed was perfectly healthy, and remained that way, while the child that was nursed by its mother became tubercular.

Chairman Smithies, Ann Arbor:

I was rather surprised at the statement of Dr Koon as to the position of Dr Knopf. I suppose it is rather incumbent upon me to defend my position as to the Calmette test. From personal observation of between six hundred and seven hundred instillations of tuberculin into the eye, I may say that only five cases have shown any serious results, and I may add at the same time that if careful examination of the eye had been made previous to the instillation, or if the patient had been kept under close observation, it is extremely doubtful as to whether there would have been any deleterious effect whatever. Three years ago I called attention to the fact that in the use of all these tuberculin tests it was necessary to use the greatest care in watching the patient after the use of the tuberculin, whether the tuberculin be administered subcutaneously, or by skin scratching, or by a solution of tuberculin put into the eye. We are playing with a rather dangerous instrument in using tuberculin indiscriminately. While in general it seems to be demonstrated that tuberculin is harmless if properly controlled, still we have cases where tuberculin was used recklessly, and it has certainly had a bad effect as a result of the uncontrolled administration.

I must agree with what Dr. Rich has shown with regard to the manifestations of the Von Pirquet test. I certainly must add my support to his view concerning the Calmette reaction. I am using these reactions every day in private practice, and I have yet to see a patient who has suffered any ill effects from their use. It may be stated that I should certainly be glad to report such if they had occurred. The securing of any positive test, subcutaneous, by the eye or skin or nasal reactions does not necessarily mean that the patient has consumption or has active tuberculosis anywhere. It simply indicates that we have such condition in the patient's blood serum as to exhibit at some local point the external manifestations of the production of protective bodies; so that in connection with all tuberculin tests, before and after the application of such a test, or its manifestations, examine the focus, whether it be in the lung, on the surface, or in the bone or internal organs. Unless this is done, the mere fact of a typical reaction means absolutely nothing. If the tuberculin tests are controlled in this manner, there is absolutely no doubt as to their clinical worth, and the sooner such facts are recognized by the profession the better it will be for the patients, the more cures we will have to report, and I think the more satisfactory will the tuberculosis situation be made all over the country.

Dr. Dempster:

May I ask what the Doctor understands by "pre-tubercular stage?"

Dr. Rich, closing:

We might discuss this matter for several days, and with considerable profit, I am sure, to those of us who are interested in the question. It is such a large question, and there are so many phases of it, that the discussion would last a long time. I endeavored in the paper which I read not to go over many things. We are generally interested in coming to some understanding with regard to some of the really important points about this thing. The one question, it seems to me, is the matter of the tuberculin tests. Without doubt the last word has not been said in regard to those tests. We are pretty well satisfied, however, as to the general direction of the final verdict in regard to it. Von Pirquet himself does not claim that the test is especially suitable after infancy and we have used it up to the age of two years. Dr. Vaughan's mention of the age of ten years was quite accidental. It is merely some stage of the child. It is not possible to say any year. If you have the

Von Pirquet reaction under the age of two years, you will be pretty well satisfied that there is a tuberculous process which has not been quiescent very long. We have had two cases of severe conjunctivitis at the Children's Hospital from the use of the Calmette test, and the fact that tubercular choroiditis is not very unusual in small children is an argument for care in its use. These cases should be, however, under careful observation before the test is made. This was in the early days, and Dr. Vaughan has pretty well convinced us in Detroit that if you take pains to make sure that the eye is a healthy eye, and if you do not put in an entirely unnecessary quantity, that it is a perfectly safe reaction. There may be some exceptions to that, but very few.

The Moro test I have used very little. We tried it a few times, but we found the Von Pirquet so easy to use, and so satisfactory, that I have not had occasion to have much experience with the Moro. Perhaps someone else can answer the question better.

The things which I wish to emphasize in this paper are that nearly everybody is affected with tuberculosis in childhood, and if we as a profession are to combat it successfully, we have to realize it. A number of cases of malnutrition, marasmus, and some others which I have seen come to an autopsy, show broken-down glands, and this has led me to believe that it is very much more common than we suspect, and that is one of the reasons for my calling attention to it at this time. If we are going to finally make a great advance in the treatment of tuberculosis, we are going to do it in children. The way in which we will finally conquer tuberculosis, if we do conquer it, will be to teach the children in school, and to eliminate school-children as the source of infection. It is not very often possible to control the expectoration of the child. It is very frequently difficult to manage them. That is where we will have to make our gains, and that is where the disease must be stopped.

Dr. Smithies remarked that so far as the Von Pirquet reaction is concerned it does not always mean tuberculosis. This is very well shown by the fact that in the early stages of measles you get the reaction, before the eruption is out. We will probably find some other limitations of the test in the course of years.

In regard to the term "pre-tubercular stage," that is put in quotation marks. It is a bad term, and I used it simply because it has been generally used, and I did not know how to get around it. I mean that group of children who are poorly nourished, and who frequently have the beginning of a tubercular infection, but in whom you are not able to demonstrate it. Those children should be taken out of the school-rooms, and have the benefit of open-air schools, and supportive open-air treatment.

Colic.—When the pain in the bowels is not due to inflammation but rather to pent-up intestinal gases or to enteralgia, the hot rectal irrigation gives good results. Also in ovaritis and salpingitis. If, however, the rectal irrigation is not convenient, the nurse can give the hot enema. One or two pints of hot water is injected into the sigmoid and colon and retained for five minutes. It is then expelled and more injected. This is repeated three to six times. The whole treatment may be repeated two or three times each day. The rectal tip of the syringe will suffice and the rectal tube is not necessary. The patient rests on her back to prevent the water passing high up in the bowel. With the rectal irrigator the hot solution flows out continuously as it enters. It does not distend the tissues but bathes all of the parts with the same temperature during the whole treatment. It is, of course, much more convenient for the patient and physician.

RETROSPECT OF CURRENT PEDIATRIC LITERATURE.

Primary Diphtheria of External Urinary Meatus.—Alfred Howell, M. D., Assistant Physician to the Cardiff Infirmary, in the *Practitioner*, says diphtheria affecting parts other than those forming the respiratory tract and the oral pharynx is not common. The following case illustrates an infection of the external urinary opening:—

The patient was a little girl nine years of age. The attention of the child's mother was first drawn to the condition by the presence of a little blood on the child's underclothing. On further examination she discovered what she described as a "blood clot" in the front passage. On the same day I first saw the child. The "blood clot" proved to be a purplish, angry-looking swelling, occupying the position of the external urinary meatus and its immediate neighborhood, rounded in outline, reaching below the base of the hymen, and completely hiding the latter. Its general appearance was much like that of a limited, much congested, prolapse of the rectum. The centre of the swelling was depressed, and admitted with difficulty a small catheter. Urine was drawn off and showed nothing abnormal. Several small punched-out ulcers were to be seen around the margin of the depression. The whole surface exuded a thin blood-stained discharge. Nothing in the nature of a false membrane was seen. The inguinal glands were not enlarged. The swelling was tender to the touch; but there was no complaint of pain, even during or after micturition. The temperature was normal. No sickness or vomiting existed. There was no history of any local injury or previous disease.

The treatment adopted was rest in bed. a sedative lotion locally, and an alkaline mixture by the mouth.

By the fourth day there was no improvement, the swelling was greater and the ulceration deeper, now forming an irregular ring around the urethral opening.

I was impressed by the continued absence of pain, and the presence of only moderate tenderness, in a part normally so sensitive. I knew that, generally, diphtheria of the tonsil, pure and simple. gives rise to little complaint on the part of children suffering from it. This suggested to my mind the possible presence of this disease.

A swab was taken, the culture examined at the Cardiff and County Public Health Laboratory, and diphtheria bacilli were found to be present. Two thousand units of anti-toxin were immediately injected. A swab taken from the throat gave no bacilli on culture.

Forty-eight hours after the injection the swelling began to diminish, at the end of another eight days it had practically disappeared, and the ulceration had almost entirely healed. At this time the examination of a second swab gave a negative result.

Apart from slight redness of the part, which persisted for some time, the child showed no complications or sequele.

One or two features in the case seem to call for remark.

(1) *The Source and Localization of the Infection.*—The throat, as already stated, showed no diphtheria bacilli, and appeared quite normal on inspection. There was no discharge from the nose or ears, and no sore on the face. A younger sister (the only other child in the house) was perfectly well. Neither had ever had diphtheria, or had either of them been exposed to any known source of infection. The propensity of young children for playing with their genitals is very common, and the infection was probably conveyed in this fashion, from some unknown source.

Diphtheria of this region, secondary to lesion elsewhere, is rare in this country. Dr. Gee, in Allbutt's *System of Medicine*, states that "diphtheria of the vulva, vagina, anus, or prepuce, are diseases very uncommon in England."

In a fairly large experience of diphtheria under the Metropolitan Asylums Board, London, I can only recall one case of uro-genital diphtheria, in a female, and that was secondary to diphtheria of the tonsils. There was no membrane present, only deep injection and swelling, as in the present case.

In the United States of America, however, this secondary form is not so rare. Dr. McCollum states that "it is not an uncommon thing for a female child to carry the infection from the nose to the vulva."

But primary infection of this part appears to be universally rare, and, writing with only access to a limited number of works of reference, I have not found mention of a single case. Diphtheria of the penis is said to occur in the child; and in adults it has been mistaken for chancre, and has been followed by post-diphtheritic paralysis.

(2) *The Absence of Constitutional Symptoms.*—Marked febrile reaction and its concomitants are rare in an ordinary diphtheric attack. When present there is a second infection with one or more of the pyogenic micro-organisms. The very number of "negatives" in the history and symptomatology may be useful, in doubtful cases, in suggesting the diagnosis. Of these, the absence of membrane is not the least important.

It is only right to add that cases of secondary vulvar diphtheria have been described as "frequently attended by marked constitutional disturbance, tenderness of abdomen, and painful micturition."

(3) *Absence of Pain and Presence of relatively little Tenderness.*—It is hardly conceivable that so much swelling as was present in this case, if due to any other infection, or if secondary to injury, could have produced so little local pain. The fact, however, is in keeping with the analgesic effects of the diphtheria toxins, both local and general.

This consideration deserves emphasis, as in so ubiquitous and insidious a disease, sparing no part or region, it may, as already suggested, point the way to finding the Klebs-Loffler bacillus, where otherwise there may be little or no ground for suspecting its presence.

The Prognosis of Congenital Syphilis.—By Karl Hochsinger, (*Ergeb. der inneren Medizin und Kinderheilkunde*, Band 5, 1910, p. 84). In a somewhat bulky paper the author gives his experiences of congenital syphilis, and discusses all the various aspects of this extensive subject. He answers all the questions entirely from the results of his own observations, and it is owing to this purely personal element that the article is of such interest.

Twenty years ago he delivered a paper before the Heidelburg Medical Society, when he drew conclusions from 380 cases observed by himself. Since then he has written nothing on the subject, but has had the opportunity of observing 436 cases, giving a total of 816. Two hundred eight of these cases, emanating from 134 families, were under observation for a longer period than four years.

He divides the subject into two—antenatal and postnatal prognosis.

The first question discussed is the viability of the product of conception. The cases are divided into three classes, according to the class of society to which they belong.

1. In this series, consisting of 258 women with 1,220 pregnancies, mostly illegitimate, 51 per cent. ended in abortion, 44.7 per cent. were born alive, but developed syphilis soon afterwards, and three per cent. were born healthy, and remained so as long as they were under observation, which, however, was not long.

2. In a second series of 134 women, who were observed over a much longer period and springing from a better class of society, of 253 pregnancies, 44.4 per cent were dead born, 46.2 per cent. were born syphilitic, and 7.7 per cent. were born healthy and remained so.

3. In the third series comprising 11 private families, in only one of which was the mother definitely syphilitic, and observed over a period of twenty years, there were 29 products of conception, of which 33 per cent. were born syphilitic, and 66 per cent. were born healthy. In this series all the patients had been well treated, and not one had married sooner than three years after the infection. In five of these eleven families there was not a single syphilitic child born. In four of the families renewal of the treatment after the birth of the first syphilitic child caused a cessation of the transmission of the disease. Thus, according to Hochsinger, the transmissibility of the disease depends to no small extent on the social condition of the parents.

That the fate of the product of conception depends in no small measure on the evidence of disease in the parents is shown by the following statistics:

1. In 38 families, where the father was undoubtedly syphilitic but the mothers remained free from symptoms, there were 53 still births, 80 living syphilitic children, and 37 healthy children, *i. e.*, 22 per cent.

2. In 11 families, where the mother was definitely syphilitic but the father healthy, there were 19 still births, 21 living syphilitic children, and two healthy children, *i. e.*, five per cent.

3. In 63 families, where the father denied syphilis and the mother presented no symptoms, there were 101 still births, 110 living syphilitic children, and 14 healthy children, *i. e.*, 11 per cent.

4. In 22 families, where both parents were definitely syphilitic, there were 61 still births, 44 living syphilitic children, and no healthy children.

In this last series, although there is the highest proportion of syphilitic children, the parents had been as heroically treated as in any of the other series, so that the virulence of the infection depends on the fact that both parents were syphilitic.

While referring in detail to cases where the mother was definitely syphilitic, and father free from symptoms of lues, he quotes the following histories:

1. A 23 years' old woman, who had been two and a half years before her marriage infected on the nipple, was energetically treated with mercury and ceased to present symptoms. Her husband was healthy and was unaware of his wife's previous history. She gave birth to several stillborn children and several living syphilitic children, but all the time her husband did not present symptoms of having been infected.

2. A 30 years' old woman, with healed gummatous syphilis of the nose, married a healthy man, and though she gave birth to several syphilitic children her husband continued free from any luetic manifestations. Hochsinger has observed 11 families in which the mothers before marriage had been infected, and in which the fathers were healthy and remained so, although of the 42 products of the conception only two or five per cent. were born free from syphilis.

The birth of healthy and diseased children alternately he has observed, but never where the mother was definitely syphilitic. Frau P., in concubinage had four healthy children, and after the death of her lover, when the above children were eight, seven, five and three years old respectively, married a latent syphilitic, and gave birth soon afterwards to a seven months' old macerated fetus. Shortly afterwards she was delivered of a healthy child, which remained healthy for four years. Still later followed two still births, and then a living but syphilitic child. Neither parent had been treated since the marriage.

Frau S. had during her first marriage given birth to two syphilitic children, who had been under observation for years. The mother always appeared healthy, had never been treated, and married again soon after the birth of the second child, and had two healthy children. In another case a healthy child of the second marriage was infected during its second year from the condyloma on the mouth of a syphilitic child of the first marriage, the mother being the same in both instances.—*Glasgow Medical Journal.*

Double Oblique Osteotomy of the First Metatarsal and Phalanx for Hallux Valgus.—By Dr. Manclaire, (*Archiv. gen de Chirurgie*, January, 1910). The operation is performed as follows:

1. Curved incision of skin, with removal of the bursa.
2. Removal of the exostosis on the inner side of the head of the metatarsal.
3. Oblique osteotomy of the head of the metatarsal from behind forwards and within outwards.

The phalanx is gripped with forceps, and its proximal end removed by a chain-saw, working also from behind forwards and within outwards (*i. e.*, the two raw surfaces are now parallel, that of the metatarsal directed upwards and inwards, and that of the phalanx downwards and outwards. By this means the phalanx and metatarsal are brought into line).

5. Tenotomy of tendons inserted into the external sesamoid bone and outer side of first phalanx.
6. Suture of skin.

This is followed by immobilisation for at least a fortnight. There is some resulting limitation of flexion; extension is as free as before, and there is no lateral movement. The advantages claimed for it are that there is no pain in walking, and the plantar arch is preserved without flattening.

This operation should only be performed in the more severe cases, where simple methods, such as mechanical contrivances, linear osteotomy, etc., have failed. In all cases particular attention should be paid to the shape of the boots.

The Route of Infection by Tuberculosis in the Infant.—By Th. Escherich, (*Wien. klin. Woch.*, No. 15, 1909, p. 515). Since breast fed infants are for the most part under similar hygienic and dietetic conditions, Escherich believes that they form specially suitable material for a study of the route of infection by tuberculosis. In all, he reports (with post mortem examinations) 22 cases of tuberculosis in infants under one year; 16 of the infants had been living for prolonged periods in close contact with infected adults; in four, where this fact was not elicited, the inquiry had not been complete; and in the other case the mother had died of tuberculosis three weeks after the birth, so that the condition in this instance was probably congenital.

At the post mortem examination the lesions in all the cases could be interpreted as being primarily of the respiratory tract. Caseous nodules, softened in the centre if the infection had not been recent, were always found in the lungs. The right lung was more frequently infected than the left. The bronchial glands of the corresponding side were usually caseous, and in some cases the glands of the opposite side were also implicated. The appearances invariably indicated that the glandular mischief was more recent than the disease in the lungs. Escherich lays stress on this point, as it is not infrequently taught that the bronchial glands are primarily infected, the lungs being secondarily invaded by a backward passage along the lymphatics

He believes that in all the cases the infection had taken place by the air passages. In only one case was there a suspicion of the infection having spread directly from the mouth. In this case there was an ulcer of the cheek, but the superficial lymphatic glands only were diseased.

In 14 cases tuberculous lesions of the intestine were found; in all ,however the disease in the lungs was of older date, and softening had occurred, so that the intestinal foci had probably arisen from swallowing sputum. The mesenteric glands in the immediate neighborhood were alone diseases, so that there was no question of the infection being primarily intestinal.

According to Escherich, pulmonary tuberculosis of infants results from inhalation of tubercle bacilli containing particles. Contact with tuberculous adults renders the entrance of these particles into the mouth easy, and by forced inspiration during crying they can readily gain admission to the bronchial tree.

He concludes that infection by means of the respiratory tract, with disease of the lungs, secondary involvement and caseation of the bronchial glands, softening and ulceration of the foci into the veins or bronchi are the various stages in tuberculosis of the infant.

Hygiene of the Mouth and Pulmonary Tuberculosis.—By Professor Dr. A. Moeller, Berlin, (*Munch. med. Wochen.*, No. 2, 1910, p. 80). While reporting a case of apical phthisis with enlarged cervical glands and caries of the teeth, in the cavities of which tubercle bacilli were found, the author draws attention to the above question. He states that as a result of the presence of tubercle bacilli in carious teeth, and in the ulcers found in putrid and unhygienic mouths, the individual may become infected. It is well known that tubercle bacilli can pass through the apparently uninjured mucous membrane in the child, so that in the case of ulcerations of the mouth this passage will in all probability be facilitated.

In a research on the frequency with which tubercle bacilli are found in carious teeth and ulcers of the mouth, this author obtained the following results. He divided his cases into two classes—those with evidence and those without evidence of pulmonary tuberculosis.

The first series included 194 children with diseased lungs. In 153 of the cases carious teeth were present, and in 182 ulcerated conditions of the mouth In the carious teeth, tubercle bacilli were found fourteen times and pseudo-tubercle bacilli twenty-three times. In the ulcerated patches tubercle bacilli were demonstrated in 35 cases, and pseudo-tubercle bacilli in 42 cases.

The other series included 53 children with healthy lungs, 36 of whom had carious teeth and 41 foul conditions of the mouth, while in only 14 could one describe the mouth as clean and healthy. In the 36 cases with carious teeth, tubercle bacilli were not found in a single instance, but pseudo-tubercle bacilli were detected in nine cases. From the ulcerated patches, tubercle bacilli were obtained six times and pseudo-tubercle bacilli 18 times.

While admitting that the tubercle bacilli more frequently gains entrance by the tonsils and pharynx, he lays stress on the possibility of the above routes, and, moreover, preventable sources, hence the hygiene of the mouth is a question of the utmost importance.

Micro-Organism Found in the Blood of Acute Cases of Poliomyelitis.—In examining the blood from acute cases of poliomyelitis in the human beings and also in monkeys in which the disease was produced experimentally an organism was found, different in morphologic characteristics from any heretofore described which may or may not, on further investigation, prove to be the etiological factor in the causation of the disease. Blood smears being fixed in methyl alcohol for one minute and stained with carbol-thionin, the organism appears as a faintly stained blue rod with regular cell wall about ten microns long and about eight-tenths microns in width, curved at an angle of sixty to seventy-five degrees at one end, occasionally at both ends. At times, the curved end is bulbous. Some of the organisms appear to have a very finely granular protoplasm when the highest amplification is employed. They may be discerned by means of a four m. m. dry objective but their characteristics are much more satisfactorily delineated under the 1-12 oil immersion lens. They are found in the serum as well as within the body of the red blood cell.

The organisms do not retain the violet color when stained by the method of Gram but assume the color of the counter stain which, as generally used in this laboratory, is a very dilute solution of carbol fuchsin.

The bloods examined were from ten different cases of acute Poliomyelitis in children and were taken during the epidemic of last summer and autumn, and from thirteen cases of the disease during the acute stage, which had been produced experimentally in as many monkeys.

Blood smears from three normal human beings were carefully examined and although the search for these organisms was diligently made, none were found. Smears were made from the bloods of thirteen normal monkeys with negative results. After inoculation with the virus these same monkeys gave positive results. The blood of other normal monkeys gave negative results.

Blood smears were stained with iodine and sulphuric acid in order to test the organisms for cellulose, but no blue stained organisms were seen.

Smears from the cords and brains of paralyzed monkeys and from one human case were examined, but none of the new organisms were found.

Filtered virus stained with carbol-thionin and by Gram's method showed none of these organisms.

Defibrinated blood, three weeks to two months old from two paralyzed monkeys showed the forms in increased numbers.

Cultures made from the blood of a paralyzed monkey, in blood bouillon, plain bouillon, and blood agar, examined after having been inoculated three weeks, showed the presence of the organisms in increased numbers. Dorsett's egg medium was inoculated with the same blood at the same time but the organism was not found in smears from the surface of the medium or from the water of condensation.

We have searched without success for moving organisms in fresh blood, in old tubes of defibrinated blood from paralyzed monkeys, in blood bouillon, plain bouillon, serum bouillon cultures three weeks old and in the condensation water in three weeks' old cultures on Dorsett's egg medium under dark field illumination.

Success in isolating the organisms has not attended our efforts as yet.

SAMUEL G. DIXON, M. D.,
HERBERT FOX, M. D.,
JAMES B. RUCKER, M. D.,
Department of Health,
State of Pennsylvania.

Danger Signals in Young Children.—We are learning that all the so-called naughtinesses of children may be merely danger signals indicating disturbance somewhere. Laziness may be a symptom of anemia or neurasthenia. The speaker made particular mention of a great number of symptoms of nervous disease, including even hysteria. Children's lies are a separate chapter altogether. Many conditions are danger signals not so much in the development of the child himself, but in the manner of his education. The wisdom and judgment of the educator are in question when all is told. Parents, as a rule, are sadly deficient in the wisdom and training required for the education of their children. No man or woman should be considered fit to marry who cannot give evidence of a training in parental functions.

If it is our desire to make a more detailed study of danger signals, we must first train ourselves so as to develop the observational attitude of the diagnostician, and to consider everything as a symptom which we cannot readily explain. And for every symptom we must train ourselves to look for a cause.

The speaker designated the normal type as one in which all functions are in proper poise and in which all potentials of the complete man or woman are present and in unimpaired growth. He referred to possible discrepancies between the chronological, anatomical, physiological and psychological age of a child, which may cause a tension fraught with danger. He spoke of a number of tests by means of which the actual age of a child in body growth and mental development may be established so as to secure for him a proper recognition of his needs. In this connection he referred to measurements of height and weight; to Prof. Rotch's X-ray pictures of the bones of the wrist; to tests measuring the special senses; to speech defects and left-handedness; to a number of disease symptoms which should be readily detected; and to the measuring scale for intelligence suggested by the Italian Professor de Santes and the French pgychologist, Binci. Family histories will add to the completeness of desirable data.

He closed with the expression of a hope that all teachers and parents may learn to consider themselves students of child nature rather than tamers and drill-masters of children.

By Maximillian P. E. Grossmann, Ph. D., Educational Director of the National Association for the Study and Education of Exceptional Children, in London practice.

The Future of Congenital Syphilitics.—(*'La Clin. Infant.,'* October, 1910, No. 19, p. 600). Hochsinger communicated to the Medical Society of Vienna the results of his researches on syphilitic infants treated at the institute and followed after leaving during a number of years. Out of 516 births, 253 were still-born or died in a few days. Out of 263 who survived birth, 55 died before five years in spite of specific treatment. The first signs of syphilis showed themselves in 54 cases on the skin, in 200 in the nasal mucous membrane, 95 times in the bones, and 50 times in the viscera. Most frequently the earliest manifestations developed in several places at once, *i. e.*, on the skin and nasal mucous membrane 134 times, in the skin, nose and bones 67 times, with associated visceral lesions in 26 cases, in the skin, nose and viscera 24 times, in the nose and bones twice. The nose alone was attacked seven times, the skin alone three times. Syphilis beginning in the bones and viscera was especially seen in living first-born infants; in later children the manifestations were less serious, without osseous or visceral lesions. In the second infants of syphilitic, cutaneous and nasal lesions were noticed in 68 per cent.; in third children 73 per cent.; while in first-borns these affections only occurred in 33.6 per cent. The earlier infants are as a rule much more seriously attacked than the later ones. Affections of the central nervous system and viscera, especially the liver, have the worst prognosis. Out of a given number of infants with syphilitic hydrocephalus, 16 recovered and three died. In 17 per cent. of the cases there was paralysis caused by osteo-chondritis or by luxation of the epiphysis. They generally yield under the influence of specific treatment. Congenital syphilitics show a marked predisposition to rickets, but without marked deformity. The large fontanelle ossifies more rapidly than in the non-syphilitic rachitic. The result of the early cranial synostosis is seen in prominence of the frontal and parietal bosses. Among the 208 cases of congenital syphilis that were followed up over a long period, 113 turned out mild, 56 of average gravity, and 39 serious. Relapses occurred in 40 of the mild cases, in 56 of the average, and in 32 of the serious. Specific treatment was ineffective in more than half the cases in preventing relapses, which were absent in only 37 per cent. of the cases. Of infants in whom treatment was not commenced until three months after birth, not one was free from a relapse. When treatment was begun before the end of the third month relapses only occurred in one-third of the cases. In first-borns relapses were more serious and more frequent (73 per cent.) than in other children, 45 per cent. for second, and 38 per cent. for third children. It should be noted that among first-borns the number of relapses was also greater (four or five against three among other children). In 31 out of the 134 families observed the children had no relapses; none of the mothers presented signs of syphilis and 21 fathers had undergone specific treatment before the procreation of the first child. In 30 other families with maternal syphilis, 65 infants were born alive of which 58 had relapses. Thus maternal syphilis furnished the largest amount of relapses. In private practice relapses are extremely rare during the first year, the syphilitic parents having undergone efficient treatment. Cutaneous manifestations are more serious during the course of relapses when the child is older. Above the age of six years gummata are frequent in the bones, most frequent in the tibia. In cases of delayed syphilis lesions of the nasal mucous membrane and larynx, viscera, circulatory system are noticed, but rarely, also, hyperplasia of lymphoid tissue and gummata of the glands. As persistent stigmata may be noticed general disturbance of development, cutaneous scarring, deformities of the skull and nose, Hutchinson's teeth and ocular mischief. It is especially when syphilis has been serious that it leaves stigmata of this kind. Among a number of congenital syphilitics Chvostek's sign is found between the ages of three to ten years; such children are often subject to headaches on which specific treatment has no influence. Wassermann's reaction was tried in 26 children over five years of age; it was positive in 12 cases of evident syphilis, and in three out of six old cases without symptoms. However, in eight children free from syphilis it was positive in three instances. Out of these 208 children 51 are quite healthy now, and it may be therefore concluded that 25 per cent. of children born of syphilitics may develop into healthy men and women.

Human Milk.—Few practitioners realize the great value of human milk for babies or at least if they do so theoretically, we find that the practice of many does not uphold such belief.

To nurse a child at the breast is such an old fashioned and commonplace habit and the patent baby food is so convenient and well advertised, that when the mother's milk shows signs of being inadequate, it is so easy for the doctor to say "Wean the baby and put him on So and So's food' and then think that he, as the physician, is relieved from responsibility.

By so doing he has robbed the babe of his birthright, without an effort to remedy natural conditions. He has taken away a vitilizing and life giving food for which no substitute of equal value can be found. We all must know that there are certain antitoxic and immunizing qualities in mother's milk which make the child stronger and more resistant to disease and which are contained in no other food.

For that reason even small amounts of milk are better than none. If the mother can nurse the babe only once or twice a day by all means use what is available and do not cut the child off entirely.

But, with encouragement and kindly advice from the physicians many more mothers than at present, could conserve, increase or enrich their breast milk and thus many more babies lives be saved. For, it is the artificially or bottle fed babies from which the high infant mortality comes and not from the breast fed ones. In order to have the mother's milk adequate, the physician must keep this object in mind during pregnancy and during confinement and especially during the months succeeding the birth of the child.

It is needless to go into all causes of breast milk failure but the principal ones are anagmia, worry and physicial fatigue from overwork or loss of sleep. These are conditions which usually can be overcome or prevented.

Then the diet of the mother can be changed if necessary to make her a better milk producer, but do not give her beer or alcoholics for such purpose.

To those who have never tried it, a good sized bowl of corn meal or oatmeal gruel given to the mother twice daily will work wonders with the milk supply.

But, some one asks, what about those cases where the mother's milk does not seem to agree with the baby? Those cases also are more apparent than real, and can be overcome by careful management. Usually the baby is nursed too often, or the mother's milk is too rich in cream and can be diluted by giving the child a small amount of water or barley water, before each nursing, or the child is constipated or there is a lack of outdoor exercise and air for babe or mother or there are other faults which can be corrected.

In any case we should not give up nursing the baby until we have made even more of an effort to keep him at the breast than we would make to keep him on the bottle.

And when the mother's milk really does begin to fail and it is insufficient to make the child gain in weight properly, it is much the better plan to substitute one or two bottles of diluted cow's milk for the same number of breast feedings and keep the child at the breast the rest of the twenty-four hours and not wean it entirely.

In other words, until the child is six or eight months old use what breast milk is available and do not destroy or take away Nature's own source of food supply without an intelligent and persistent effort to remedy conditions. —*Ed. Charlotte Med. Jour.*

A Case of Cirrhosis of the Liver.—(*'St. Thomas's Hospital Reports,'* Vo xxxvii), G. G. Butler. Female, aged 12 years. There was no history of phthisis and no alcoholic history. Indefinite abdominal pain fourteen days, with swelling of abdomen one week. The skin was a good deal pigmented. There was ascites and the spleen was enlarged. Calmette's test negative. Paracentesis several times, the ascitic fluid containing endothelial cells and finely granular oxyphiles. Urine contained blood and albumin. Hematemesis shortly before death. Post mortem: Intestines and omentum adherent to anterior abdominal wall. Well marked chronic peritonitis, with matting of intestines and localized collections of fluid. Portal vein not thrombosed. Liver small, 30 ounces, pale irregular surface. Tough on section. Well marked mixed cirrhosis on microscopical examination. Spleen very large; kidneys large; cortex swollen; acute nephritis. Pancreas normal. Dilated esophageal veins.

Chronic Appendicitis in Children.—(*'Arch. de Med. des Enfants,' Brit. Journ. Dis. of Children*). Comby reviews 139 cases of children in which chronic appendicitis was diagnosed and discussed the differential signs. The condition is much commoner than is generally recognized. Many cases of supposed dyspepsia, anemia, liver affection, entero-colitis, status lymphaticus and tuberculosis are often the effect of chronic appendicitis, while acute appendicitis is merely the lighting up of a chronic process. Periodical vomiting and indigestion are premonitory of acute appendicitis. Constipation is habitual, though diarrhea may sometimes occur. Failure in development has been observed, but after appendicectomy the children rapidly attain their normal size. In the nervous form of chronic appendicitis the patients are moody and disinclined to play or work. Intercostal neuralgia also may be a sign, or a pain in the right leg with a tendency to limp, suggesting disease of the hip or knee. In another class there is a tendency to faintness and pallor. Headache, convulsions, urticaria, and prurigo were observed in other cases. The proof that these various conditions are caused by appendicitis lies in the fact that restoration to health occurs after appendicectomy. A spontaneous cure of the chronic inflammation cannot be counted upon, though the symptoms may be latent sometimes for years. Surgical treatment is required in the majority of cases. The danger is slight, but the diagnosis must be positive. In cases of doubt the writer advises operation and has never regretted having done so.

Prevention of Feeble-Mindedness.—Dr. E. R. Johnstone, Vineland, N. J. Before the American Public Health Association, thirty-eighth Annual Meeting, held at Milwaukee, Wisconsin, September 6 to 9, 1910, said: Two or three states have passed laws authorizing the unsexing of degenerates after they get into institutions, but please note that these individuals must get in the institutions first. I heartily approve of the operation of castration and merely agree to vasectomy and salpingectomy. After these operations have been performed a fair percentage of the patients may be returned with safety to their homes, and thus make room for others in the institutions, but the ideal way is to gather all the feeble-minded into institutions and train them in so far as possible to be self-supporting—plenty of industrial occupation and very little academic training. From 30 to 50 per cent. can be made entirely self-supporting after ten years' training. Take the women of child-bearing age first and teach them to raise and can small fruits, raise poultry and garden truck, knit underware, weave rugs, carpets, etc. Then take the others as young as possible and the economic problem comes close to solution. But do not talk—get to work. The numbers are increasing. If they are not cared for in well conducted training schools, where they may learn to contribute toward their own support, they must be kept in almshouses, reformatories, prisons and other institutions,and when they are led into evil ways the taxpayers pay for their arrest, their trial and the damage they have done. If feeble-mindedness is to be checked, physicians personally must do something.

Lactose and Lactic Acid in the Stools of Children Suffering From Green Diarrhea.—(*La Clin. Infant., Brit. Journ. Dis. of Children*), P. Lavialle found that lactose given for a short time in large doses caused diarrhea, during which lactose is found in large quantities in the urine and in small quantities in the feces. In green stools lactose is found in excess of the total ingestion of this sugar, and where it is absent lactic acid is found. The presence of these two substances seems to result from the rapidity of the intestinal transit. The author is of opinion that lactic acid, characteristic of green stools and already present in the intestine previous to evacuation, is a normal product, produced in considerable quantity during digestion at the expense of the carbohydrates, and whose elimination is associated with a pathological condition. Its *role* in the intestine may be to excite the secretion of certain glands, or to facilitate the breaking up of certain substances and to further the action of the digestive ferments. But the author thinks that its chief use is to maintain at a nearly constant level the nature of the bacterial flora of the intestine by promoting a tendency towards mono-microbism, a *role* which explains the good results obtained by the administration of cultures of various lactic bacteris and of fermented milk such as kephis and koumiss. Lesage has shown that the green coloration of diarrheaic stools may not be entirely due to biliverdin, but also to a green pigment secreted by a *coli*-form microbe. In the latter instance the feces would not give the reaction of the bile-pigments. The author, in making autopsies in cases of gastro-enteritis, has noticed an intensely green colour of the bile in the gall-bladder, and that yellow semi-solid feces present very distinct green spots. Now, bile could only give a uniform green coloration to feces if it is already green in the gall-bladder, and the author is now engaged in investigating the origin of this local green coloration.

A Case of Hypogastrodidymy.—(*Allg. Wien. med. Zeitung.*,' June 21, 1910). Neufeld describes this rare case of twins joined at the pelvis and abdomen; delivery occurred spontaneously without medical help. The right-sided child was 41 cm. long, head circumference 34. cm., mento-occipital diameter 20 cm., bi-parietal 16 cm. The left-sided child was smaller; length 37 cm., head circumference 26 cm., mento-occipital diameter 16 cm., bi-parietal 12 cm. Eyes, noses, mouths, chests and lungs normal. No heart-sounds heard in right child; over the heart of the left there was a soft murmur. Percussion showed normal dimensions in both. The individual formation of the children ceased at the lower part of the thorax, commencing at the left ribs; the abdomen and pelvis were common to the two children. At the lower part of the abdomen there was a cleft four and one-half cm. long and two cm. wide; the cord passed through the upper part of this in a fissure. Just beneath this was a large curved mass, probably the ectopic bladder. At the lower corner of the cleft there were four papillomatous structures. One of these resembled a rudimentary penis; there was a fine opening at the top through which no catheter could be passed. The symphysis was widely separated. There was no anus, but two linear skin creases in the perineum. There were four arms with normal fingers; in front there were two legs with normally developed toes. From the back a third lower limb was seen, seven cm. higher than the other two and articulated to the pelvis of the left child. The foot was a club foot with five abnormal toes. There was besides, on the dorsum pedis near the metatarsal articulation, a sixth toe. The children lived three and a half days.

Ovarian Dermoid in a Child, Aged Eight Years.—('*China Med. Journ.*,' 1910, p. 349), Ruth B. Massey. A Chinese girl aged eight years, was brought for treatment on account of pain and swelling of the abdomen. Examination revealed a tense, movable tumour the size of a cocoa-nut in the lower part of the abdomen and slightly to the right of the middle line. The condition, which had been noticed for two months, caused no trouble till severe pain came on suddenly, and for some days the girl was unable to stand upright. The tumour then became more tender and less movable. At the operation a cyst was found and easily cleared of recently formed adhesions to the omentum; on tapping some fluid was drawn off slowly, but on aspiration the flow stopped at once. A second attempt proved equally unsuccessful. The cyst was then brought out of the abdomen, and the pedicle, which was long and twisted, was ligatured and divided. No trace of another ovary or a uterus was found. The child made a good recovery. The tumour proved to be an unilocular cyst containing fluid, in which a fine network of fibrin floated and this doubtless accounted for the trocar becoming blocked when attached to the aspirator. In the lower part of the cyst was a solid tumour containing hair and a small piece of bone.

Round Worms Passed From A Fecal Fistula.—(*China Med. Journ.*,' 1910, p. 348), Ruth B. Massey. A Chinese girl, aged 12 years, was brought for treatment because of a sinus in the right loin, which ran upwards and forwards. The sinus dated from a vague illness three or four years previously. Treatment was at first refused, but three weeks later she was brought again on account of worms passing from the wound. The child was admitted and on examination the sinus was found discharging pus, but no fecal matter was seen. After a severe attack of pain an anesthetic was given and the sinus enlarged and explored. The last rib was felt to be healthy, there was no sign of spinal mischief, and though the liver could be felt, no disease was detected. A drainage tube was inserted and a dressing applied. On dressing the wound three days later fecal matter was discovered in which were three round worms. Santonin was administered and ten worms were found at the second dressing, eight at the third, and a gradually decresing number were seen at each dressing for four or five days. Many of the worms were alive when found in the dressing; at the same time a few were passed per rectum. There was great pain while the worms were being passed but this disappeared afterwards. No more worms were passed, although, when the child was removed from the hospital six weeks later, the fistula was still unclosed.

Dangers of Santonin.—E. J. Baxter, (*Lancet*, December 10, 1910). A girl, about five years of age, who was suffering from round worms and thread worms, was given one-half grain of santonin in two drachms of castor oil, but this was vomited almost immediately. Three days later this dose was repeated. It was retained for eight hours when it acted, bringing away the worms. The child then became very weak and for two days lay as if she were dying, without moving her limbs or opening her eyes. On the third day she began to recover, and it was then discovered that she was quite blind. Three months later sight had not returned.

Hexamethylenamine in Meningococcus Meningitis.—Walter Brem, (*New York Med. Journ.*, October 22, 1910). Acting on a suggestion made by Crowe (see *Prescriber*, 1909, p. 108), who discovered that hexanethyleme tetramine was eliminated in the cerebro-spinal fluid, the author administered 15 grains four times daily in a case of meningococcus meningitis. The drug was detected in the cerebro-spinal fluid obtained by lumbar puncture, and it apparently had the effect of limiting the number of organisms in that fluid. Though the case terminated fatally, the very acute infective process was of comparatively long duration, and it is suggested that the drug might be useful as an adjunct in the treatment of meningitis cases, or as a substitute for Flexner's serum if the latter is not obtainable.

Vaccine Treatment of Diphtheria.—P. E. Walton Smith, (*Australasian Med. Gaz.*, October 24, 1910). This method of treatment was tried in the case of a patient in whom the bacilli were found in the throat after complete recovery. An autogenous vaccine was prepared from the throat, and an injection containing six million diphtheria bacilli and ten million cocci (staphylococci being present in the culture) was given. Marked local reaction and general disturbance occurred on the following day, but a swab from the throat was still positive. A week later another injection (eight million bacilli) was administered. A swab taken from the throat at the time of this injection was still positive, but subsequent cultures were negative. It is suggested that vaccines should be used as a routine measure in combination with the injection of anti-diphtheritic serum.

Guaiacose in Tuberculosis in Children.—Ramacci, (*Rassegna di Pediatria*, December, 1910). This author refers to the various methods of treating tuberculosis, and especially to the use of guaiacose, which is a flavored solution of somatose and calcium guaiacol-sulphonate. It is tonic and restorative, as well as antiseptic. It is excreted largely by the lung, and possesses healing properties in virtue of the presence of calcium in its composition. The dose is about half a teaspoonful thrice daily, with or immediately after food. Several cases are recorded in which considerable amelioration of the patient's condition took place after the administration of this remedy. Distinct gain in weight was observed in every case, while the hemoglobin especially was markedly increased. Charts are given which show that guaiacose has a very distinct effect in reducing the temperature as well as in definitely increasing the body weight of the patient. The author accordingly regards guaiacose as the best means of exhibiting creosote to young children.

New Method of Sterilizing Milk Without Altering Its Ferments.—Heryng of Warsaw describes a method he has devised for this purpose. He points out that milk as a product of the lactiferous glands is not a simple solution of nutritive matters. Like the blood, it is a living tissue which is possessed of various biological properties. It contains different ferments, distinguishing it from other kinds of milk and playing a very important part in the normal development of the new-born. Milk, like the blood, contains anti-toxins. All these bodies are destroyed at a temperature of 62 degrees C. Heating the milk above 100 degrees C. decomposes and spoils the albuminoid bodies: casein, sugar, fats and the salts. The last named previously soluble becomes insoluble. The property of milk is renewing the tissues in intimate relation with the calcic salts and iron, phosphorus and sulphur, in combination with the albuminoid bodies. Sterilization makes the milk inert. Feeding with sterilized milk contributes to the large mortality among infants, which in some countries reaches appalling figures.

None of the methods at present in use sterilize the milk without decomposing its ferments and anti-toxins. Many of the milks sold as "sterilized for infants" are found by bacteriological examination to be thickly populated with bacteria. Heryng's method is based upon the fact that the ferments of milk, although destroyed by a temperature of 56 to 70 degrees C. if the heating is continued for some minutes, remain intact if only heated for a few seconds and then immediately cooled down. A small apparatus, suitable for domestic use, was constructed in which it was possible in a short time to sterilize 200 to 250 c.c. of milk. A steam spray or compressed air spray, pulverizes the milk in a glass condenser. During this procedure the milk is heated to a temperature of 75 to 80 degrees C. It then condenses and is allowed to drop into a receiver in which it is at once cooled. Before using the apparatus, the condenser and the receiver are sterilized by a current of steam at 95 degrees C. By the spray-producer the milk is broken up into fine drops, upon each of which the heat acts rapidly and energetically. By using steam as the pulverizing agent the milk is diluted about 10 to 15 per cent.

Heryng claims the following advantages for this method: the milk retains its physical and chemical properties, colour, smell, taste, fats, and sugar; the albuminoids are unaltered; at a temperature of four degrees C. the milk does not turn for eight or ten days if kept sheltered from light; the milk becomes homogeneous; the apparatus is simple in construction and application, and attains the fixed temperature 75 to 80 degrees C. under control of a thermometer.

The method can be used on a large scale in dairies, but the use of compressed air dried and heated to a suitable temperature is then necessary for the pulverizing agent.

Milk so treated has been examined by Prof. Ticker in the Hygienic Institute at Berlin, who found a minimum amount of bacteria, the ferments retained, and the albuminoids normal. In the laboratory at Warsaw experiments were made with milk infected with typhoid germs, pus, cholera, typhus, and pyocyanic germs, as well as Koch's t. b. All were destroyed some at 10 degrees C., some at 75 degrees C., and some at 80 degrees C.—*Dieut. de therapeutigue medico-chir.*

On the Influence of the Variety of the Food of the Mother on the Growth and Development of the Suckling.—By A. N. Schkarin, (*Monatschrift f. Kinderheilkunde*, Bd. ix, No. 2, 1910, p. 65).

On the Influence of the Nourishment of the Mother on Lactation.—By Arthur Keller, (*Ibid.*, p. 69). These two articles treat of the same subject—Schkarin considering it from the experimental aspect and Keller from the clinical.

Schkarin used rabbits, and investigated the question in three litters—the mother in one instance receiving an ordinary vegetable diet; in another, a diet of flesh and milk; and in the third, milk and eggs. As a guage of the development of the animals they were weighed daily, and the percentage amount of P_2O_5 was estimated at various ages. No animal was observed for a longer period than four weeks.

The first series, where the mother received an ordinary vegetable diet, were used as controls.

On the diet of flesh and milk the mother steadily emaciated, losing half its weight in four weeks, when it ceased to suckle. Nevertheless, the young increased in weight as rapidly as the control animals, and the percentage amount of P_2O_5 was exactly the same.

In the third series, the mother did not at first take well to the diet of milk and eggs, though no loss of weight was observed till the end of the third week. In this series, also, the young developed normally, both as regards increase in weight and percentage amount of P_2O_5.

Keller recently had the opportunity of studying this question in the case of the wife of a colleague, who, one month after the birth of a healthy child, weighed 11 st. one-half pound, and on that account commenced a strict "Banting cure." Breakfast consisted of one cup of tea, one small roll, and 150 grms. roast beef, dinner of half plate of soup, 150 grms. flesh, one roll, and one glass of wine; while for supper she took 120 grms. roast beef and some red wine.

The caloric value of the above diet varied between 800 and 1,000, *i. e.*, patient received 11 to 14 calories *pro kilo* of body weight instead of 30 calories *pro kilo* as allowed in a normal diet. Through this diet patient lost in sixteen days five pounds. About one month later a more varied diet, but one having a less caloric value, was commenced, with at first a consequent gain in weight, but later a loss again, which loss became even more marked on the withdrawal of all salt from the diet. In addition, severe exercise was taken daily.

For the first month, while the mother was on ordinary diet, the child did not drink well, and its weight remained stationary; but during the next two months, while the mother was undergoing the "Banting cure," the child steadily increased in weight by 500 grms. per month. This is even more remarkable, considering that the child never obtained more than 14 ounces of milk daily. At the beginning of the fourth month the mother's milk disappeared, and the child was given a wet nurse.

The Treatment of Congenital Dislocation of the Hip.—Experience has amply demonstrated the advantages of the manipulation treatment of congenital dislocation of the hip. If the Lorenz method is adhered to without modification a prolonged treatment is often necessary, after removal of the plaster, to get rid of stiffness or to correct a faulty attitude. For the first three months the limb is fixed abducted to a right angle. After this period it is usual to reduce the abduction of the hp to 45 degrees and to fix the limb again in plaster. At this stage in the treatment, Codet-Boisse (*Gaz. Hebdom. des Sci. Med.*, 28th August, 1910), places the limb, which is abducted to half a right angle, in the position of strong internal rotation.

The X-ray examination of many cases has convinced him that if the abduction is lessened, without rotating the limb inwards, there is a tendency for the head of the femur to be displaced forwards. In these cases a considerable time must elapse before a useful limb can be obtained. In a previous paper Codet-Boisse has published his results in thirty-seven cases of congenital dislocation of the hip.

Twenty cases in which the femur was not rotated inwards yielded eleven functional cures, but in only four cases were the anatomical relations perfect. In a second series of seventeen cases, treated by internal rotation, there was functional cure in fourteen cases, and in all the cases the head of the bone was normally situated.

The case of a child, aet. 4, is quoted to illustrate the rapid return of function with this method of treatment.

The limb was rotated inwards, and the abduction reduced to 45 degrees within two and a half months. The fixed apparatus was discarded after seven months, and massage and faradisation employed. Four weeks after the plaster was removed the movement of the joint were normal and the child could walk without a limp.—*Sellinges Amer. Jour of Surg.*

"Every Little Movement"

The old family physician was examining a diaper near the window. He was humming absent-mindedly a popular air, "Every Little Movement Has a Meaning of Its Own." Finally he turned to the anxious mamma with a smile and an encouraging prognosis. The group made a charming genre picture.

Leucorrhea in Children.—In children a discharge from the vagina too often indicates a gonorrheal infection obtained by contact with soiled clothing, bedding, or the use of public toilets. If this be neglected, later in life the adenexa and uterus may be found involved. Foreign bodies, rectal irritation and uncleanliness are other causes of infection.—*Med. Record.*

BOOK REVIEW.

Modern Diagnosis and Treatment of Diseases of Children. A treatise on the medical and surgical diseases of infancy and childhood, with especial emphasis upon clinical diagnosis and modern therapeutics. For practitioners and students of medicine. By Herman B. Sheffield, M. D., (Co-Author of "Practical Pediatrics"), Instructor in Diseases of Children at the New York Post-Graduate Medical School and Hospital; Visiting Physician (Diseases of Children) to the Yorkville Dispensary and Hospital for Women and Children, and to the German Poliklinik; Fellow of the New York Academy of Medicine; Associate Editor of the Centralblatt f. Kinderheilkunde, etc. With one hundred and fifty original half-tone photo engravings and numerous smaller illustrations, some in colors. Philadelphia, F. A. Davis Company, publishers, 1911.

This volume presents in an instructive manner a clinical treatise of the diseases of infancy and childhood, embodying therein the essentials of the theory of Pediatrics so as to meet the needs of both the medical student and general practitioner. The greater part of this work is based chiefly upon the author's personal experience in hospital, dispensary and private practice and presents also an amplitude of observations, which is obtainable only in large cosmopolitan centers.

We are pleased to note that the time-worn, stereotyped, verbatism quotations of different authors, and the customary over-abundance of illustrations of "fads and fancies," which help to pad the greater number of our modern text-books, have been eliminated. The valuable space thus gained has been utilized for an ample array of carefully selected photographs and notes to illustrate which emphasize the most important diseases met with in actual practice. The author ventures to introduce material changes, especially in the following subjects: Feeble vitality of the newly-born; hemorrhea congenita et acquisita; microcephalus; infant feeding; gastroenterocolitis; acute meningitis; tuberculosis and tetanism. Furthermore, special chapters are devoted to physicial diagnosis and semeiology, general and special therapeutics, congenital malformation and mental diseases—matters of great importance which have thus far received but little attention in current Pediatric literature. This work reflects the mature experience of a keen observer of the best and latest knowledge in Pediatrics. It is reliable and thorough throughout, both as a text-book for the student and as a reference book to the general practitioner. The reviewer is pleased to note that the author has introduced side notes so appended as so to enable the reader at a glance to grasp the most essential points of interest of the subjects under discussion. This is a valuable addition of Pediatric literature and we predict for the same a large sale and feel it both a duty and a pleasure to commend it to our readers.

Case Histories in Pediatrics, a new book on diseases of children, by John Lovett Morse, A. M., M. D., Assistant Professor of Pediatrics, Harvard Medical School, Associate Visiting Physician at the Infants' Hospital and at the Childrens' Hospital, Boston. Containing 320 octavo page, and a few illustrations. Price, express prepaid, $3.00. W. M. Leonard, publisher, 101 Tremont Street, Boston.

The author has selected 100 actual case histories, classified under sectional headings to illustrate the diagnosis, prognosis, and treatment of the most important diseases of infancy and childhood and considered each case under the captions history, physical examination, etc., exactly as he has done before his Post-Graduate classes. This book, taken as a whole, presents a Post-Graduate clinical course in diseases of children. Dr. Morse devotes much space and attention to diagnosis which is thoroughly discussed by naming diagnosis, which might with some reason be made and eliminating each in turn by careful references to clinical signs, terms and symptoms. The clinical terms being that which cannot be set aside and which all symptoms support.

There is a vitality in this work which is refreshing. It deals with actual conditions, as the Doctor meets them in daily practice. It is absolutely true throughout without possible error or misstatement. The book is original and thorough and the most interesting, as well as the most valuable to the general practitioner, who can look to it for helpful suggestions as to a consultant and not be disappointed. It gives us much pleasure to commend this valuable work.

Handbook of Treatment for Diseases of the Eye. (Ophthalmic Therapeutics), by Dr. Curt Adam, Assistant Surgeon in the University Clinic for Diseases of the Eye, Berlin, with a preface by Prof. Von Michel, Berlin. Translated from the Second German Edition, (1910), by William George Eym, M. D., F. R. C. S., Ed. and E. M. Lithgow, M. B., F. R. C. S., Ed. With thirty-six illustrations. Price, $2.50. New York, Rebman Company, 1123 Broadway.

This handy little manuel was primarily intended for the use of the surgeon who does general practice. The author assuming that the surgeon is fairly familiar with the anatomical arrangement, and diagnosis of diseased conditions of the eye, only points out the differential diagnosis of the most perplexing questions, giving more attention to treatment. The more common diseases of the eye are referred to sufficiently for the needs of the general practitioner, but when the disease is of a nature sufficiently abstract to call for, or justify a consultation with a specialist, the fact is plainly stated and so far as distinction between the disease which a general practitioner should treat and ought not to treat, and those requiring the advice and experience of a specialist is fully dealt with. Only those operations of the eye are described which may fairly be considered to be in the domain of minor ophthalmic surgery, while on the other hand injuries, and particularly those of a nature to benefit by first aid, are delineated in minute detail. This is a very handy little volume and the fact that the second edition is called for in less than a year attests its value and appreciation by the profession.

The Prevention of Sexual Diseases, by Victor G. Vecki. M. D., Ex-President San Francisco German Medical Society, Member American Urological Association, American Medical Association, California State Medical Society, etc., with introduction by William J. Robinson, M. D. The Critic and Guide Company, 12 Mt. Morris Park, West, New York, 1910. Price $1.50.

This small volume deals, in plain terms with the sexual question, the prevention of sexual diseases more particularly. The author strikes out straight from the shoulder without mincing words, tells you the plain truth about sexual matters, but unfortunately, gives no solution of the vexed problem of how prostitution should be censured or sexual diseases prevented.

PEDIATRICS

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EDITORIAL

WHY WOMEN SHOULD SUCKLE THEIR OFFSPRING.

The reasons why children should be suckled at their mother's breasts are larger than some may be inclined to believe. In the first place the psychological reason is one of no mean importance. The breast with its exquisitely sensitive nipple, vibrating in harmony with the sexual organs, furnish the normal mechanism by which maternal love is developed. No doubt the woman who never suckles her child may love it, but such love is liable to remain defective on the fundamental and instinctive side. In some women, indeed, whom we may hesitate to call abnormal, maternal love fails to awaken at all until brought into action through this mechanism by the act of suckling.

It is involved in the proper fulfilment of a mother's relationship to her infant that, provided she is healthy, she should suckle it. Of recent years this question has become a matter of serious gravity. In the middle of the eighteenth century, when the upper-class women of France had grown disinclined to suckle their own children, Rousseau raised so loud and eloquent a protest that it became once more the fashion for a woman to fulfil her natural duties. At the present time, when the same evil is found once more, and in a far more serious form, for now it is not the small upper class but the great lower class that is concerned, the eloquence of a Rousseau would be powerless, for it is not fashion so much as convenience, and especially an intractable economic factor, that is chiefly concerned. Not the least urgent reason for putting women, and especially mothers upon a sounder economic basis is the necessity of enabling them to suckle their children.

No woman, is sound, healthy and complete unless she possesses breasts that are beautiful enough to hold the promise of being functional when the time for their exercise arrivĕs, and nipples that can give suck. The gravity of this question today is shown by the frequency with which women are lacking in this essential element of womanhood, and the young man of today, it has been said, often in taking a wife, "actually marries but part of a woman, the other part being exhibited in the chemist's shop window, in the shape of a glass feeding bottle." Blacker, found among a thousand patients from the maternity department of University College Hospital that thirty-nine had never suckled at all, seven hundred and forty-seven had suckled all their children, and two hundred and fourteen had suckled only some. The chief reason given for not suckling were absence or insufficiency of milk; other reasons being inability or disinclination to suckle, and refusal of the child to take the breast (Blacker, *Medical Chronical*, Feb., 1900). These results among the London poor are certainly very much better than could be found in many manufacturing towns where women work after marriage. In the other large countries of Europe equally unsatisfactory results are found. In Paris Madame Dluska has shown that of 209 women who came for their confinement to the Clinique Baudelocque, only 74 suckled their children; of the 135 who did not suckle, 35 were prevented by pathological causes or absence of milk, 100 by the necessities of their work. Even those who suckled could seldom continue more than seven months on account of the physiological strain of work. (Dluska, Contribution a l'Etude de l'Allaitement Maternal, de Paris, 1894.) Many statistics have been gathered in the German countries. Thus Wiedow (*Centralblatt fur Gynakologie*, No. 29, 1895), found that of 525 women at the Freiburg Maternity only half could suckle thoroughly during the first two weeks; imperfect nipples were noted in 49 cases, and it was found that the development of the nipples bore a direct relation to the value of the breast as a secretory organ. At Munich Escherich and Buller found that nearly 50 per cent. of women of the lower class were unable to suckle their children, and at Stuttgart three-quarters of the child-bearing women were in this condition.

The most important reason why the mother should suckle her baby, provided she is reasonably healthy, is that her milk is the infant's only ideal food. Really the only way to modify cow's milk is for the mother to drink it first and thus elaborate in her body Nature's infant food. All other foods are more or less possible substitutes, which require trouble to prepare properly and are, moreover exposed to various risks, from which the mother's milk is free. An additional reason why the mother should nurse her child is the close and frequent association with the child thus involved, not only is the child better cared for in all respects but the mother is not deprived of that disclipine of such care and she is also enabled, from the outset to learn and understand her child's nature.

CHRONIC BRONCHITIS.

In another department of this issue will be found a paper entitled, "Persistent Chronic Bronchitis in Children," to which we ask our readers attention. **Catarrhal Affections** of the bronchial tubes are very common in infants, and, to a much less extent, after infancy. They are dangerous because the young cannot cough and expectorate, and portions of the respiratory area become useless from atelectasis. They are subdivisible into groups according to the degree of extension of inflammation down the respiratory passages. All these affections are infrequent after the third year, except as complications of other diseases.

The main predisposing causes are rickets and impaired vitality. Hence the lack of maternal nursing is a potent factor. The chief exciting causes are chill, rapid change in temperature wet and exposure, and cold baths. A few cases are due to direct inhalation of irritants, such as steam from a kettle. Many are secondary to extension of catarrah from the throat, naso-pharynx or larynx. They are common complications of measles, whooping cough and influenza, and frequent in typhoid fever, diphtheria and other infectious diseases. Many are due to tuberculosis, or a terminal infection of ileo-colitis and summer diarrhea. Pathologically they may be ascribed to infection, the bactericidal action of the mucosa being reduced by congestion.

Chronic Bronchitis is uncommon in children. It may be a sequel of an acute or sub-acute attack in a delicate child or one living in bad hygienic surroundings. Predisposing factors are deformity of the chest from rickets and spinal curvature, congenital heart disease, mitral stenosis and regurgitation, tuberculosis and bronchiectasis. A few cases possibly are due to congenital syphilis.

Cough is the main symptom. It is more or less chronic, worse in cold weather and in winter, worse in the early morning from accumulation of secretion in the tubes during sleep, and often paroxysmal from bronchial spasm and suggestive of whooping cough. Expectoration is usually scanty. The general health is little or not at all affected. Vomiting may be induced by cough, especially in the morning after breakfast. Bronchitis rales may be present in the morning and during exacerbations. The chest becomes emphysematous.

The diagnosis is based on the history, emphysema, bilateral physical signs, and the absence of signs of tuberculosis, such as nocturnal fever, wasting and tubercle bacilli. Pertussis must be excluded. The duration of the disease is indefinite, and there is great liability to attacks of acute or sub-acute bronchitis.

According to Cautley, of London, England, this is quite an uncommon disease in children and he urges great care in the nursing and treatment of children suffering from this malady. He advises that these patients should be treated by climate, clothing, food and cod liver oil. He recommends terebene, or hydrate of terpene, m. 2-5 on sugar quartis horis, to relieve bronchitis spasm and lessen dyspnea, as well as to lessen and thin the secretion. Potassium iodide, creosote, as well as the alkalies are also useful and in cases where there is cardiac complications digitalis will be of use. Inhalation of alkalies, creosote, terebene or turpentine may afford relief in some cases. Pilocarpin internally has been recommended by good authorities, but residence in a warm, dry climate is of undoubted value.

INFANTILE COLIC.

Many little things are in reality the great things of life. The observation is that of a philosopher, simply borrowed for the occasion. The statement has a three-fold application to infantile colic. It applies to the infant itself, especially in its earliest life; to the mother, particularly if she be young and inexperienced, and to the family physician. By the law of continuity it applies as well to the infant's father, but this observation of the philosopher we will not stop to borrow.

It need not be remarked that colic is one of the first thorns in the infant's pathway, and of frequent occurrence, especially in infants deprived of breast milk; that colic is merely a symptom, and that its presence and prevalence are only exceptionally indicative of disease. Disease is rather a result of an attack of colic upon the comforts of the infant and the household in general. Colic is a discordant note in the tenor of the young life, an indication of the presence of a disturbing factor by no means always arising from improper food or faulty digestion.

Mothers frequently charge their infants with excessive greed and rightfully attribute to this attacks of colic. In many such instances the fault is not in the infant, but in the nipple. What is interpreted as *greed* is simply effort to avoid choking. The volume of milk passing through the nipple necessitates rapid swallowing and what seems to be voracity, is in reality distress.

The diagnosis of colic is not always correctly made, without a careful physical examination. Mothers may judge wrongly. The cry which the mother quickly accepts as an infallible sign of colic is only an expression of distress, which may or may not be due to pain, especially in older infants.

Pain in the very young may result from soreness incidental to birth, griping accompanying the earliest movements of the bowels, urinary retention, caused by phimosis, renal colic and kindred incidents in the establishment of normal functions. In older infants earache, teething, soreness in the abdominal muscles, tender joints, due to rickets and other painful maladies must be considered in the diagnosis of colic.

The signs of colic are well known, but require for their recognition more or less physical examination. These signs are hardness of the abdomen, palpation of coils of intestines, tendency of the infant to draw up the legs and the expulsion of flatus, accompanied by vigorous crying. Cessation of crying after the passage of flatus, is of course, always a sign of the proper diagnosis.

The treatment of infantile colic is a subject requiring painstaking circumspection in the use of remedies. The prompt relief, which narcotics afford has power to hypnotize and often entail serious results on a helpless life. The tendency to the use of various soothing syrups of the shops should be severely discouraged. Many cases of colic may be promptly relieved by a little manipulation of the infant, with or without gentle massage of the abdomen. This method of treatment, by some, may be considered too trivial for recognition in this connection, were we not considering the little things of life. On the other hand the family physician may not infrequently render the highest services to both mother and child, by instructing the nurse how to jump an infant abdomen down, to secure relief from colic pains. Many of the cases of so called colic are simply flatulency, or in nursery parlance, "wind on the stomach." The greatest relief in the treatment of infantile colic is warmth. This may be applied to the abdomen either dry or moist, or employed internally either in the form of hot water or hot enemas. An admirable method of applying warmth in the treatment of infantile colic is the hot water bag. If narcotics must be used a formula containing paregoric fennell seed and celery makes an admirable carminative. Rotch, of Boston, recommends, as a carminative to be administered between feedings, more especially in bottle fed infants, the following prescription: Sodium bicarbonate, 40 grs., spirits of ammonia arom,. 40 m., glycerine, 40 m., aqua menth. pip. q. s. ad. two ounces, Sig.—One teaspoonful between feedings to concentrate the high degree of acidity. In cases when acidity is not an element requiring special treatment he advises lac-asafetida. Rotch remarks that the use of narcotics in the treatment of infantile colic is only exceptionally justifiable.

PEDIATRICS

ORIGINAL ARTICLES

THUMBSUCKING AS AN AUTO-EROTIC PHENOMENON

BY
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While sex as an expression of physiologic balance or in its excessive or perverted manifestation of disharmony has been too little considered, still the attempt of the Freud school to revive the occult notion of its being an entity rather than a co-ordination, which has been overdone, is now losing its original impetus. Sex is an evolution, not an absolute factor. Life and reproduction occur before the appearance of sex. Indeed, the sexual impluse was long ago demonstrated by the biologists to be but an evolution from the nutritive. Necessarily it must under favoring conditions revert to this old relationship. The Freudists reverse the picture in their discussion of the infantile sexual impulse, and revert here to occult notions just as they do in the besetting sin idea which dominates their conception of a sexual trauma. Here and elsewhere the Freudists ignore the great pathologic law of the etiologic moment. The etiologic moment consists of the inborn constitution of the individual, the state of that constitution when the exciting cause is applied and the character of the exciting cause; translating etiologic into psychologic terms, this law holds good with all mental states. It is certainly true that given causes will produce certain effects just as true as that a match will produce an explosion but it makes a great difference whether the match be lighted and be thrown into gasoline, kerosene, gunpowder, or the sea. So it makes a great difference whether a given mental shock makesits impact on a given cerebral spinal system at a given time or not. It is perfectly true that a sexual trauma may push an illy balanced constitution into hysteria when it would have no effect on a normal one, nor even on a teratologic one unless that be in a state of exalted emotion. The absolute sex concept of the Freudists which completely ignores the etiologic moment is excellently illustrated in Freud's discussion of thumb-sucking. "Thumbsucking" according to Freud, "which manifests itself in the nursing babe and which may be continued until maturity or throughout life, consists in a rhythmic repetition of sucking contact with the lips wherein the purpose of taking nourishment is excluded. A part of the lip itself, the tongue which is another preferable skin lesion within reach, and even the big toe may be taken as objects for sucking. Simultaneously there is also a desire to grasp things which shows itself in rhythmic pulling of the ear lobe and which may cause the child to grasp another person (generally the ear) for the same purpose. Pleasure sucking is connected with an entire exhaustion of attention and leads to sleep or even to a motor reaction in the form of an orgasm. Pleasure sucking is often combined with a rubbing contact with certain sensitive parts of the body, such as the breast and external genitals. It is by this road that many children go from thumbsucking to masturbation. The most striking character is that the impulse is not directed against other persons, but that it gratifies itself on its own body. It is moreover clear that the action of the thumb-sucking child is determined by the fact that it seeks a pleasure which has already been experienced and is now remembered. Through the rhythmic sucking on a portion of the skin or mucous membrane it finds the gratification in the simplest way. It is also easy to conjecture on what occasions the child first experienced this pleasure which it now strives to renew. The first and most important activity in the child's life, the sucking from the mother's breast (or its substitute) must have acquainted it with this pleasure. We would say that the child's lips behaved like an erogenous zone, and that the excitement through the warm stream of milk was really the cause of the pleasurable sensation. To be sure, the gratification of the erogenous zone was at first united with the gratification of taking nourishment. He who sees a satiated child sink back from the mother's breast, and merge into sleep with reddened cheeks and blissful smile, will have to admit that this picture remains as a guide for the expression of sexual gratification in later life. But the desire for repetition of the sexual gratification is separated from the desire for taking nourishment; separation which becomes unavoidable with the appearance of the teeth when the nourishment is no longer sucked in but chewed. The child does not make use of a strange object for sucking but prefers its own skin because it is more convenient, because it thus makes itself independent of the outer world which it cannot yet control, and because in this way it creates for itself, as it were, a second, even if an inferior, erogenous zone. The inferiority of this second region urges it later to seek the same parts the lips of another person. ("It is a pity that I cannot kiss myself," might be attributed to it).

Not all children suck their thumbs. It may be assumed that it is found only in children in whom the erogenous significance of the lip-zone is constitutionally re-enforced. Children in whom this is retained are habitual kissers as adults and show a tendency to perverse kissing, or as men they have a marked desire for drinking and smoking. But if repression comes into play they experience disgust for eating and evince hysterical vomiting. By virtue of the community of the lip-zone the repression encroaches upon the impulse of nourishment. Many of my female patients showing disturbances in eating, such as hysterical globus, choking sensations, and vomiting, have been energetic thumbsuckers during infancy.

In the thumbsucking or pleasure sucking we have already been able to observe the two essential characters of one infantile sexual manifestation. This manifestation does not yet know any sexual object, it is autoerotic and its sexual aim is under the control of an erogenous zone. These characters also hold true for most of the other activities, of the infantile sexual impulse."

Freud in referring to thumb-sucking to a purely conscious desire ignores completely the rhythmic law of the nervous system by which an impulse once generated tends to recur. This underlies habit and other rhythmic nervous and mental processes. The phenomena of sucking have not the specific simplicity claimed for them by Freud. As Meynart points out residual images would not furnish adequate motives for our movements and deeds if the phenomena of feeling were not inherent in them. To the reflex of sucking may be applied the term reflex of aggression; to that of vomiting, reflex of rejection or repulsion. The conscious movement based on these reflexes are termed respectively movements of aggression and repulsion. These resulted from association with the ideas of satiation and injury. Such concepts are not mere passive reproductions of former images, but their reproduction is attended by a degree of intensity which is termed emotion. In both cases the emotion varies, producing pleasure in the one case and pain in the other. A pleasurable emotion gives rise to movements of aggression, a painful emotion to movements of repulsion, One is better able to fathom the different degrees of emotion or feelings by following a more complicated though physiologic train of thought and omitting physiologic definitions altogether. Our understanding may be furthered by a series of facts including more than mere bodily pain and the reflex of repulsion; since there is a movement accompanying the latter and affecting the arteries of the central organ and the connection of this correlated movement with the change in chemical relations, phenomena which are at the foundation of all nerve phenomena. It will answer our present purpose to designate these chemical relations by the short expression: respiration of nerve cells.

The solution of this problem would be reached by showing that the conjoined processes with others involved in the mechanism of reviving association images or concepts. Even though a decapitated frog responds to pinching of his skin with a kicking repulsive movement, there is no need of supposing that a sensation of skin preceded this act. The condition of the cutaneous irritant of the muscle is not the only process here set up, to which, if the brain had not been removed, sensation would have been added. Every sensory act produces a number of secondary effects acting upon the central nervous organ and that such secondary effects in default of fore-brain consciousness are nothing more than the consequence of an irritation which would be adequate to the excitation of pain.

The experiments of Schiff and others have shown that in animals, in which the conduction through gray substance has been impaired by excitement or otherwise, cutaneous irritation produces simply tactile or thermal sensations; in spite of the adequate nature of the irritation (burning) and the presence of the fore-brain, there is no sensation of pain. To this changed condition of irritability is applied the term analgesia. Nerve conduction, through the net work of gray substance, meets with a certain resistance which can be guaged by the time which elapses in the transmission of a peripheral impulse. With an increase in the number of muscular groups excited to action by a reflex irritant, an increase in the resistance to nerve-conduction results. The irradiation of any irritation so as to involve a large number of muscular groups, say those of the side opposite the cutaneous irritation, will depend upon the duration and intensity of the latter and will have an influence upon the character of the pain sensation resulting from said irritation. The sensation of pain therefore, is attended both by a reflex movement and by an inhibition of nerve-conduction in the gray substance of the spinal cord. The strength of the resistance to be overcome in the case of motor irradiation increases even in the case of the unconscious decapitated frog with the duration and intensity of the irritating cause. It is evident that the inhibition resulting from resistance introduced in nerve tracts accompanies the simplest reflex processes, while consciousness in the main recognizes this inhibition as pain. Inhibition involves the question of retardation in the conduction of reflex nervous impulses. A nervous impulse takes, according to Holmholtz, about twelve times as long to travel through the gray substances as it does to be transmitted through the peripheral nerves. Transverse conduction largely increases the time required for the reflex act, as when a stimulus applied to the one side is to excite the muscles of the other side.

According to Exner, the stronger the stimuli the less the amount of time required to effect a reflex action.

Irritation of a sensory nerve excites in decapitated animals not only a repulsive movement of the skeleton muscles, but exerts an influence also over the circular muscular apparatus of blood vessels, the centers for which are located in the spinal gray matter. The ex- and in-tensity of this influence vary directly with the amount of irradiation of the original stimulant impulse. The dilatation of the blood vessels in the web of a frog's foot continues steadily to increase as layer after layer of the spinal cord is removed. Goltz has demonstrated the functional activity of the spinal vasomotor centers in animals, and W. Schlesinger has proved their presence by experiments with strychnia. Repulsive movement is attended by a reflex contraction of the spinal cord arteries, similar to the one which takes place in normal animals and which is observed to result from an increase of blood pressure in the carotid after the application of strong sensory stimuli. The rise of blood pressure in the carotid following sensory stimulation was measured by Owsjannikow and Ditmar with the use of the manometer. This increase of pressure depends upon reflex contraction of the arteries. In this way physical pain produces swooning and explains why in former centuries when a confession was extorted in court by torture, the person incriminated would fall asleep while undergoing the pangs of the rack. There is no better proof of the presence of sensory process in animals than the rise of the blood column in the manometer following upon external stimulations and that this increase of manometerical pressure is caused by the reflex vasomotor constriction set up by the excitation of sensory nerves. The contraction of the arteries by impeding the respiration of the nervous elements must necessarily engender a dypnoetic phase of nutrition, it will modify the chemical changes going on in these elements and as a further result of this the sensory stimulus is associated with the irritation resulting from a certain degree of dyspnoetic intoxication. Dyspnea of tissue is alone sufficient to excite repulsive movements, inspiration is the most ordinary form of repulsive movement evoked by a dyspnoetic stimulus which in extreme cases may by irradiation involve a number of muscles. But this dyspnoetic stimulus results not only from defective breathing, but also from increased arterial pressure as in convulsions or from arterial contraction as in anemia. The convulsions occurring in persons bleeding to death are an instance of the latter kind. The respiratory centers extend, according to Rokitansky, into the cervical portion of the spinal cord.

From what has just been said it results that even in the spinal cord of decapitated animals movements of repulsion are connected with sensory excitation, inhibition of nerve conduction, increased arterial pressure and with dyspnoetic stimulation of nerve cells.

Movements of aggression also can be demonstrated in animals that have lost the pros- and di-encephalon and indeed in animals which have retained the spinal cord only. Goltz remarks: "If on a fine summer's evening we hear the croaking of the frogs we conclude correctly enough that these inhabitants of the marshes are thoroughly happy in the enjoyment of the tepid water. The same cheerful spirit is inferred in the playful aggressive movements of a cat engaged in pushing a ball or a mouse before it and always endeavoring to recapture it, when animals frolic and tumble about incessantly on the grass and in the open air, or birds that give expression to their mirthful restlessness by their songs and direct their aggressive movements upon crumbs, seeds or worms. All these convey the same impression. As soon as a stone is thrown into the pool the frogs cease their croaking in view of the danger to which they are exposed; an enemy suddenly appearing before animals that have been tumbling about in the full enjoyment of their liberty, will cause them to hide themselves or to start movement or repulsion by taking to flight." The unhampered purposeless movement of a lively animal; the song of a bird, the merry bark of a dog—are in reality movements of aggression. Goltz has excited similar movements of aggression in decapitated animals, such movements indicating a certain selfconsciousness attended by undoubted pleasurable sensations. He was able to elicit the croaking of the frogs and aggressive movements of clenching the female as in the sexual act. The stimuli which Goltz had to apply in this instance differed materially in character from those which elicit repulsive movements. The effective stimuli were of a gentle sensory and non-painful character. Gentle friction between the shoulder blades sufficed to provoke a croak in frogs deprived of their fore-brains and (slight) pressure brought to bear on or friction of the breast and flexor surface of the arms was followed by an embrace of anything which had been placed within reach of the arms. The transmission of such gentle stimuli, through reflex gray substance, could not take place in the face of any great resistance and, being permitted, it compels the assumption of the existence of a distinct center which is reached at once by external stimuli. The "center" excited in the croak experiment lies in the mesencephalon, while the reflex center for the sexual embrace in male frogs is in the cervical portion of the spinal cord. The term "embracing spasm" will do justice to the powerful muscular action resulting probably from a hyperesthesia of the frog's spinal cord produced during heat by the nerves of the testicles, but existing for some time after the removal of the testicles.

The exciting cutaneous stimulus need be merely of the slight, unpainful intensity mentioned above. Hence even in the case of frogs that are brainless as far as consciousness is concerned, the correlated effects (in the central organ) of aggressive movement and the accompanying circumstances differ from those attending repulsive movements with which consciousness associates the sensation of pain. These two orders of correlated secondary effects are on the whole diametrically opposed to one another.

1. The stimuli are gentle and not painful, they must be conveyed to certain centers direct without irradiating and without overcoming any resistance or inhibition. In the sexual spasm of the frog the conduction of nerve force was assisted and not inhibited by a periodic increase in the excitability of the center. Just as the consciousness of a painful impression is based upon or is attended by inhibition of nerve impulses, so the consciousness of a pleasurable impression is attended by the free transmission of nerve forces.

2. In the one case the irradiation of a stimulus adapted to the excitation of pain sets up activity in the center for the vasoconstrictors followed by increased arterial pressure and active arterial anemia as concomitants of repulsive movements, and in the other case there is no irradiation produced by external stimuli, no inhibition and no increase in arterial pressure accompanying aggressive movements. The movements of aggression are associated with a diminution of blood pressure, a dilatation of the arteries entailing the so-called functional hyperemia. Dittmar's opinion that increased arterial pressure keeps step with the progress of sensation does evidently not apply to the generation of aggressive movements. The functional arterial dilation necessarily produce an apnoetic phase in consequence of the increased tissue-breathing of the nervous elements and brings about a chemical change also differing from the one effected by a painful stimulus which called forth a dyspnetic phase of nutrition of these elements. The antitheses are suggested by the fact that in the reflex centers, aggressive and repulsive movements inhibited one another because of the different processes set up by the order of movements or the other. Goltz has shown that the ordinary croak cannot be elicited if painful stimuli be simultaneously applied and that the sexual spasm will be inhibited if any part of the frog's body be at the same time touched with acetic acid. And on the other hand the great excitability of the sexual spinal cord center under the influence of the testicle-nerves may, during the period of heat, inhibit the repulsive movements which would follow painful stimuli were they not inflicted during the sexual act.

Does the same accompaniment of vasomotor innervation of differences in the chemical changes of nutrition, attend the secondary mechanism of conscious movements incited and set into action by subcortical reflex acts which (movement) are based upon the revival of cortical images and are effected through the mediation of association tracts? Who can say whether among the impulses of the ego and within the bounds of free will, there cannot be discovered and discriminated between a series of repulsive movements which had to overcome a resistance to nerve conduction and aggressive movements which have had free passage through the nerve tracts engaged in their excitation or transmission?

Although it has been shown that great expanse of cortical surface favors the restriction of certain functions to certain localities, it is certain that, apart from the association through the arciform bundles and on the supposition that its gray substance represents a network of gray fibers, the condition of its structure permits the irradiation of stronger stimuli, as is the case in the spinal cord and the remainder of the central gray substance. Association and irradiation are two very different processes. The process of irradiation in the cortex interferes seriously with that of association. As in the spinal cord so in the cortex, vasoconstrictor nerves will be excited by an irradiating sensory stimulus. Eulenberg, Landois and Hitzig have shown that upon stimulation of the cortex the extremities of the opposite side grow cooler through arterial constriction and upon removal of the cortex the temperature of the parts increase (Hitzig) so markedly thorough arterial dilatation that it can be discerned by the hand placed upon the extremity of a dog so operated upon and without the corroborative evidence of a thermometer.

Take the case of a brainless frog exposed to an intense sensory impression (pinching with forceps) and displaying an inhibition sufficient to overcome the stimulus and then discuss the influence of the stimulus upon the vasomotor nerves and the repulsive movements executed by motor nerves, but vary the example by supposing an animal to be in full possession of its brain. A person who has been teased with forceps or who has undergone the pangs of an operation will recognize this intense irritation as an impossible (unbearable) act of perception. Evidently irradiation meets with severe and widespread resistances in the gray substance of the cortex as well as in the central gray substance. In this respect the pain answers to a sensation of inhibition. The inhibition obstruction to the path of this irradiating stimulus, calls for an exhausting amount of excitation and this effects inhibition of other cortical functions and sets a limit to the activity of the cortex; it inhibits attention thought and the association of ideas as well. Secondary conscious movements of repulsion are incited toward all the hands of instruments that have inflicted the torture. As concomitant conditions occur paleness, nausea, loss of consciousness, together with slowness of pulse, with or without convulsions or unconsciousness, together with rapid pulse and universal convulsions.

Loss of consciousness attended by nausea and slowness of pulse may be ascribed to irradiation affecting the vagus, (the cerebral nerves of the heart) and to anemia of the brain, from suppression of the systole.

Restricting the field of discussion to the data or experimental physiology evidencing vasoconstrictor influence of the stimulated cortex, enough has been said to show from the importance of the cortex as a vasomotor center and from the relation between strong sensory impression and in increase of blood pressure, that conduction of strong sensory stimuli into consciousness (into the cortical gray) increases the arterial pressure and arterial constriction thus setting up active anemia. Whether this leads to actual unconsciousness or not, the sensation of pain is associated with increased narrowing of the arteries. But contraction of the arteries implies a chemical change the dyspnotic phase of prosencephalic nutrition and united to the latter this disagreeable sensation of pain. External chemical changes such as accompany difficulty of repiration in impure air are attended by a sensation of discomfort and restlessness leading to repulsive movements, loss of consciousness even to swooning with convulsions. Hence, strong sensory stimuli excite in a reflex way, conscious movements of repulsion and in orginating sensation of pain introduces inhibition, arterial contraction and dyspnea of the fore-brain elements. Not only does the perception of actual pain incite movements of repulsion, but the mere sight or touch of, or a sound from, objects which are associated in the fore-brain with the idea of pain, danger or death, as the pain itself, movements of repulsion and create in the cerebral cortex all the conditions of subjective torture, concomitants of real pain. If the mere sight of the sharp end of a knife, of loaded firearms, of a wild animal let loose, of a fire, a corpse, an operation, on others, or the sight of blood suffice to produce loss of consciousness or swooning attended by the sensation of inhibition of thought or impels the witness to take to flight, ideas of pain must be intimately connected with the revival of reminiscence of these objects and this subjective pain is of sufficient intensity to arouse all the correlated physiologic sensation accompanying genuine objective pain; namely, inhibition, increased arterial pressure, dyspnoetic phase of nutrition and repulsion. Referring again to the former example of the consciousness of an intense sensory irritation upon the spinal cord, it is seen that the entire complicated primary form of the reflex mechanism is transmitted secondarily to the fore-brain. The instance cited referred to associations started by the actual perception of objects calculated to produce pain, but the momentary painful stimulus was lacking. Physiologically speaking, the stimulus bears a special characteristic sign resulting from the excitation of their terminal apparatus; among such signs may be classed cutaneous irritants, dazzling light, unusually strong waves of sound, etc. Pain is classified with the feelings but it is distinguished from sensory perceptions by its widespread irradiation which interferes with localization.

Feelings without physical pain are termed emotions. Here are concerned painful emotions, psychical pain. That painful emotions depend solely upon associations, upon inference pointing to the perception of pain, can be proven by a simple analysis of the objects which excite pain. The retinal images of a tame and of a wild animal, of an indifferent person or of one whom we feared, are projected upon the same retinal area, possess the same color and the same intensity of light. An indifferent red fluid and blood leave the same impression upon the retina. Mere precept itself cannot excite emotion but the association united to the former can. It is therefore the mechanism of the hemisphere, only the process of thought, which excites physical pain and movements of repulsion, as well as the arterial contraction, which may terminate in swooning and in engendering fear and feeling of incapacity of action. Marked inhibition of nervous impulses from the fore-brain excites like the inhibited conduction of painful sensory stimuli or the suggestion of torture, a concept of the impossibility of conteracting this inhibition which may ultimately lead to suicide: A physiologic process occupying much time and consisting in the dissolution of now purposeless associations and the formation of new ones, precedes the introduction of this death news to the web of associations. Inhibition is attended by emotion and physical pain. With inhibition and physical pain there is connected an increase of arterial pressure which, during an emotion, may, by mere presentation to the mind, produce swooning. Inhibition or resistance on the lines of nerve conduction through the gray substance as well as increased arterial pressure in consequence of strong sensory impression are physiological facts.

Improverishment of the brain substance in oxygen has the effect of a chemical irritant which excites dyspnoetic respiration in the oblongata and produces epileptic changes in the so-called convulsions centers. Since increased arterial pressure, even in the cortex, produces an improvement in oxygen, a dyspnoetic phase of nutrition will be set up in the cortex as soon as the conditions of painful sensations exist. Sensation itself is the subjective form of perception of all these physiologic processes; as it were, the expression of a special sense concerned with the nutritive phase of the cortex.

Kussmaul (as Meynert remarks)* shrewdly indicated certain perceptions and movements, common to the fetus in utero, which feeds itself, as it were, by swallowing amniotic fluid. He indicates likewise that there may be special motives, such as the more stimulating taste of the fluid after occasional depletion, into it of the allantois, which induce swallowing. Here then there are two alternatives. The fetus swallows, or does not swallow. Fetal consciousness is already presupposed, which would exist, however, under circumstances that give but little opportunity for perception. The new-born infant at once discoveres signs by which it distinguishes between one set of perceptions and another. One set of perceptions helps it to define the circumference of its own body, another set belongs to the world beyond it. However obtuse this perception may be, though the child may at first not be able to discriminate between the various impressions of space, still it is certain that the child's perception of its own body circumference is established very early. Among other means by which it learns to distinguish between impressions received from its own body and the outer world are these: Contact of a strange finger with its own skin excites but one tactile sensation; contact between two parts of its own body excites two tactile sensations; one from the touching, the other from the touched part. Furthermore a number of strange auditory sensations strike the ear of a child, but only the sound of its own voice is accompanied with muscular sensations, and so the attendant muscular sensations help the children to discriminate between movements of its own body and any other movement it may see. There is no order of movements, which, under the cover of instinct can be pushed in between conscious and reflex movements. The first instinct of a child would be the instinct for food. There is absolutely nothing in the sensation of hunger, which would acquaint the child with the means of remedying this pain. It attains naught but the concept of pain. In the general restlessness it displays and in the convulsions ultimately resulting from anemia there is nothing which could be likened to an instinct for food. If the child has not to depend on its own resources, but has a nipple put into its mouth, then the sensation thus excited starts the reflex mechanism of sucking. The child has thus acquired the concept that the sensation of satiation is connected with the act of sucking, and these two sensory memories are associated with the innervation-sensations aroused by sucking, and probably, by the scent of the mother's breast. That a child should suck at every finger may be attributable to a reflex mechanism, but the sucking of the child in dreams proves that the act of sucking has produced images which have been registered in the cortex. The factors of this primary abstract ego are not definitely defined. . . . The nature of the ego does not depend upon any definite order of memories, but is determined simply by the most firmly fixed memories. . . . . As soon as movements of aggression have taught the child to take hold of things it is evidently under the impression that it is living in a world of sweets; it takes everything to the mouth and licks it. A later aggressive movement—kissing—like the first sucking movements, is probably based upon the act of bringing an attractive object to the mouth. This latter movement is clearly dependent upon a powerful secondary presentation aroused by its impressions, just as the sucking movements during sleep denote secondary presentations excited in the course of dreams. . . . . Space vision in the child excites movements of aggression, which aim at the possession of the thing it sees, but as it lacks the power of locomotion it has no conception of distance. These aggressive reflexes of the upper extremities are no more co-ordinated in space than the movements of the eyes are before the child has learned to see, and through irradiation these movements become general, leading to a tossing of the whole body, to kicking with all-fours and to cutting of grimaces. These movements, though extravagant, are not spasmodic, but must be regarded as results of cortical impulses interfered with by cortical irradiation. . . . The acoustic nerve also takes part in reflex impulses; the child that hears others speak or perceives other sounds and noises has the desire to bring forth the same sounds and noises. As its cortical functions improve, it develops the secondary idea that the sounds which it brings forth are similar to those of ordinary speech. Wundt correctly remarks, that "the speech of animals consists of so-called sensory sounds, and this is true of children before they have acquired the faculty of imitating syllables. . . . In all aggressive movements the child over-estimates the possibilities of its powers. Experience and an improvement of the power of imitation correct these false conclusions. As soon as the child has reached the age when all cortical fibers acquire their white substance, purely reflex movements, and those due to irradiation, diminish in number. . . In the child the expression of emotion may vary much. Under the influence of the apnoetic effect of functional hyperemia attendant upon pleasurable emotions there will be movements of aggression bespeaking the force of the child's own personality, or there will be spasmodic movements of repulsion (due to irradiation), such as screaming and crying. All these expression movements, whether due to irradiation or not, dispatch sensations of innervation to the cortex, which sensations are there turned into "special memories" and serve later on as impulses starting the entire groups of movements, which are involved in expression. Consequently these movements of expression result primarily from stimulation of sub-cortical centers, just as simple forms of reflex movements serve as the foundation upon which the structure of more complex conscious movements is raised. As soon, however, as these irradiatory impulses, which excite the mechanism of expression, are put under control of an organ of motor co-ordination, they acquire secondarily a higher value as psychic factors of expression. In the child pleasurable emotions result in general movements of the entire body. Even in the adult who dances for joy or performs other extravagant movements, occurs a repetition of these primitive mimical movements of the child. . . . . . A state of excessive, pleasurable emotion may pass into a condition of maniacal excitement as a result of dilatation of the arterial network of the brain, or a state of pleasurable confusion may end in a transitory swoon. . . . The doctrine that ideas are inherited, and are not the result of perception and association—that movements, even mimical ones, are the result of innate motives and have nothing to do with imitation and early reflexes, can hardly be applied to man.

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*Psychiatry, Sach's Edition.

The medulla oblongata with its reticular ganglion is the great rhythmic center. In fish the movements of the operculum and mouth, in sharks those of the spiraculum, in perennibranchiate amphibians the branchial tree, in the infant the suctorial muscles, in all vertebrates the movements of deglutition, of the heart, and of the respiratory muscle—all rhythmic movements, in short—are under control of the medulla oblongata. Its early differentiation is related to early manifestations of rhythmic movements in the embryo, and to their predominant importance in lower animals. Rhythmic movements may, however, be spinal, may even be controlled, as in invertebrates, by peripheral ganglia (heart of embryo). Higher development concentrates rhythmic innervations at a point where anatomic association (the expression of the interinfluence of these movements) may be affected.

The psychic and physiologic factors of thumb-sucking are hence much more complex than the restricted theory of Freud implies, this does not comply with test that a given hypothesis to be accepted must not only explain all the facts but must exclude every other explanation that thumb-sucking does occur with erethism in the child just as any other motor state does coexist is undesirable. Its association is more fortuitous than that of thigh friction, which as an auto-erotic procedure may occur, as E. W. Townsend has shown as early as six months after birth. Erethism may appear at birth and an accidental coexistence of any motor display might lead to an association, which under the rhythmic law of the nervous system would tend to recurrence. The erethismic state awakening the motor display and the motor display arising from another cause, tending to arouse the erethism. The condition here is essentially that of the erotic symbolisms or fetchism phenomena at the sexual orgasm when great emotional exaltation exists, and the will is in abeyance in consequence. A man may be then seized by an obsession differing in character from the voluptuous. Seeing a woman's shoe, he is unable therefore, to experience sexual emotion without this conception. This amply suffices to explain all auto-erotic phenomena of thumb-suckers. These are of fortuitous origin not necessarily part of the practice.

THE DIFFERENCE BETWEEN THE MANIFESTATIONS OF RHEUMATISM IN CHILDHOOD AND ADULT LIFE.*

BY

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"Rheumatism," says Dr. Still, "is one of the many diseases which illustrate the considerable difference which may exist between the manifestations of one and the same disease when it occurs in an adult and when it occurs in a child."

Almost the same words are used by Dr. C. H. Dunne, of Boston, when he says that there is no disease in which the clinical pictures are more widely different in childhood and in adult life. That these remarkably similar statements are true is quite evident to anyone who has experience of the characteristics of rheumatic attacks in early life. The rare occurrence of joint complications in children, the frequency of chorea, and the presence of rheumatic tonsilitis and rheumatic nodules, with their grave significance, alone prove how great this difference may be.

(1) **Manifestations.**—The chief manifestations of rheumatism in children have been given as follows: Articular inflammations; muscular rheumatism; rheumatic nodules; endocarditis, myocarditis, and pericarditis; erythematous eruptions of various sorts, including erythema nodosum; chorea; pleurisy; and lastly, tonsillitis.

These manifestations are not mentioned in the order of their frequency or importance. They emphasize, however, in what various ways rheumatic infection shows in the child.

It will be noticed that hyperpyrexia with acute polyarthritis of adults is omitted, while many forms are mentioned which are confined to early life.

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*A paper read at the Royal Academy of Medicine in Ireland, (Section of Medicine, February 10, 1911 *British Journal* Children's Diseases.

Dr. C. H. Dunne, writing in the *American Journal of Medical Science*, July, 1908, about the pecularities of the symptomatology of rheumatism in children, calls special attention to the frequency with which rheumatism in children may make its onset with cardiac symptoms alone. He says that it begins with arthritic symptoms in only 40 per cent. of all cases, and gives the following interesting clinical classification:

(*a*) The mild arthritic; (*b*) the severe arthritic of older children; (*c*) latent type, beginning with fever; (*d*) mild primary endocarditis; (*e*) severe primary endocarditis with fever and incompetency; (*f*) mild pericarditis; (*g*) severe pericarditis, always with effusion.

Most, I think, will have had experience of all these clinical types of the disease, and many will agree that the mild athrhritic and the mild primary with endocarditis are the most important to recognize. In these cases the absence of symptoms of urgency renders them liable to be overlooked, and the diagnosis may not be made until the cardiac lesions are obtrusive and irreparable, where early rest might have been of advantage. Anemia of a mild type is generally present.

(2) **Rheumatic Facies.**—Efforts have been made to associate with rheumatism in children a typical facies. While this may not have been entirely successful, most are agreed upon the frequent presence of a nervous temperament. The rheumatic child is often of a restless and excitable disposition.

I will quote the description of the rheumatic child given by Dr. Hutchison. It is of great interest and importance, but I am inclined to think it is of more advantage in dealing with the community amongst whom Dr. Hutchison's labors are spent.

"These children," writes Dr. Hutchison, "are dark rather than fair; their hair is dark, their eyes are dark, and they have long, dark eyelashes. At the same time they have a peculiar white skin and a very good complexion; they have a clear bluish-white sclerotic, and they have often well-formed teeth and large, square, central upper incisors." On the other hand Dr. Still emphasizes the association of red hair with rheumatism. "Out of eighty children with red hair," he states, "there was rheumatism either in the child or in the family in forty-seven.

(3) **Wasting.**—One of the causes of wasting in children which should not be overlooked is advanced cardiac disease

subsequent to rheumatic endocarditis, often without any history of inflammation of the joints.

(4) **Anemia.**—The occurrence of anemia as a complication or associate of rheumatism is more frequent in the child than in the adult. It is more marked in the severe cases with advanced cardiac lesions. The blood is characterized by a diminution in the number of red corpuscles and greater reduction in the percentage of hemo-globin. There is usually a leucocytosis.

(5) **Rheumatic Nodules.**—The occurrence of rheumatic nodules in children further increases the difference between the adult form and that common to children. These nodules are found in young adults, and have been recorded lately by Dr. H. D. Rolleston as occurring on the external ears. They are also doubtless found late in life, but more rarely, they are associated with, and diagnostic of, the disease in children

These nodules are round or almond-shaped, quite hard, and freely movable. They occur under the skin, and usually over bony prominences, such as the olecranon or patella. Many may be present, or there may be only one. I have lately observed two cases, each showing one nodule. In one the nodule was on the outer and posterior part of the pinna of the external ear, and in the other a large one was found over the olecranon.

In structure they are fibrous, the fibres being arranged concentrically around a core of fibrin. They are associated with endocarditis, and, according to Dr. Cheadle, when really large are equivalent to a sentence of death.

(6) **Tonsillitis.**—Of rheumatic tonsillitis it is difficult to speak with certainty. The diagnosis is often provisional, and may remain always doubtful unless the unfortunate occurrence of sequela or complications, such as endocarditis, prove confirmatory. In such cases the inflammation extends to the soft palate. I have seen it in association with erythema when the diagnosis had to be made from atypical scarlet fever. That, however, was not a difficult matter. The rash was not punctiform, the symptoms were mild, and sweating was profuse. To lay stress on the frequency and importance of rheumatic tonsillitis in children I have tabulated the following remarks:

(i) **Tonsillitis Followed by Polyarthritis.**—At the Philadelphia Pediatric Society, May, 1909, Dr. Newlin showed a boy with polyarthritis, which developed after an attack of tonsillitis lasting one week. There was an increased area of cardiac dulness and a blowing systolic murmur at the apex, transmitted to the axilla. The attack of tonsillitis occurred in 1908, and two weeks afterwards the knee-joints became swollen, stiff, and painful.

(ii) **Endocarditis and Pericarditis Following Tonsillitis.**—(a) At the Philadelphia Pediatric Society recently Dr. Simonis exhibited the heart of a girl aged six years. She had had frequent attacks of follicular tonsillitis. Autopsy showed adherent pericardium and a large vegetation, cylindrical in shape, half filling the left auricle and ventricle, and attached to the papillary muscle in the ventricle. (*British Journal of Children's Diseases*, June, 1910, p. 268).

(*b*) Dr. Wachenheim, (*Pediatrics*, 1908, p. 466), states, as a result of examination of 113 cases of rheumatism in children, that 60 per cent. of the cases had undoubted cardiac lesions, that the joints were not involved to any extent until after the fourth or fifth year, and that tonsillitis was a very frequent complication.

(iii) **Frequency of Tonsillitis.**—McCrae gives 3.7 per cent. of cases of rheumatism showing tonsillitis, while Hammerschmidt gives 50 per cent., and says that all his cases showed some pharyngeal irritation. Other observers range between these two.

Gurich has reported that certain cases of rheumatism show a reaction when the tonsil is operated upon, and he believes that there is a tonsillar type of rheumatism in which the removal of the tonsillar tissue cures the disease.

(7) **"Growing Pains."**—The seriousness of "growing pains" in children has frequently been urged by many who believe in their relation to rheumatism, and grave disasters have been attributed to the neglect of rest and anti-rheumatic remedies in these cases. The question will always remain unsettled, because a history of "growing pains" can so often be elicited. Much can be gained by the discussion of this interesting point if it prevents us overlooking what may appear trival, and yet may be an indication of a serious condition or of danger ahead.

Dr. Coudray, writing recently in the *Gazette Medicale de Paris*, states that these pains have nothing to do with growth, and are observed in children or young adults who present a defective balance of nutrition and are the offspring of arthritic parents.

(8) **Chorea.**—It is not intended to refer to chorea at any length. Although confined to childhood it is amply treated in the usual medical text-books.

The relationship of this condition to rheumatism resolves itself into the investigation of the statistics of clinical and pathological reports of the last sixty years, characterized by a remarkable preponderance of opinion in favor of the nearness of their connection and ending in the researches of Poynton and Paine.

It is only necessary in this instance to state that if chorea be undoubtedly a manifestation of rheumatism it further emphasizes the difference between the character of that disease in the child and in the adult.

(9) **Cardiac Rheumatism.**—"It is very easy," according to Dr. Lees, Consulting Physician to the Children's Hospital, Great Ormond Street, in an article on this subject in this *Journal* March, 1909, "to overlook a cardiac rheumatism in a child unless the physical examination is promptly and thoroughly carried out, for the cardiac muscle may be grievously affected though no murmur is to be heard on ausculation and the external evidence of rheumatism afforded by arthritis, so abundant in the adult, may be almost or even entirely lacking in the child."

The earliest rheumatic cardiac phenomenon in the child is, in most cases, an acute dilatation of the left ventricle. Affection of the cardiac muscle precedes endocarditis or pericarditis, and the first evidence of an attack is obtained by careful percussion in addition to the other signs to be mentioned.

The cardiac dulness to the left almost always reaches the nipple line, and later may extend beyond it by one or sometimes two finger-bredths. Along with this evidence of dilatation there will be a diffuse or weakened cardiac impluse, a weak pulse-wave in the arteries, an enfeebled first sound at the apex, and an accentuated pulmonary and sometimes aortic second sound. The pulse-rate is abnormally frequent, and is increased after slight exertion.

It may be added that clinical experience goes to prove that the acute dilatation of the left ventricle above described is present in even the mildest attacks of "sub-acute rheumatism."

(10) **Treatment.**—The treatment of rheumatic attacks in childhood differs only from that necessary in adults in the great importance of early and prolonged rest. And, as Dr. Lee has pointed out, in all cases where a suspicion of rheumatism

exists, where an unexplained pyrexia and rapid action of the heart are found in association with nodules, erythema, tonsillitis, choreic movements, and other signs, much may be gained and no loss incurred by insistence on rest in bed until the symptoms have subsided. Full doses of the salicylate are given with double the quantity of bicarbonate of soda. The latter is supposed to lessen the danger of acid intoxication, but it seems too presumptuous to expect that such a profound constitutional disturbance, often ending fatally, whether it be a question of idiosyncrasy or consequent on the existence of a fatty liver, can be averted, as it seldom can be cured, by doses however large, of bicarbonate of soda.

This problem is yet unsolved, and the possibility, though remote, of averting such a catastrophe as acid-intoxication will gladly be accepted by anyone who has had experience of such a misfortune. The inclusion, therefore, of bicarbonate of soda in the drug treatment of rheumatism in children may be considered justifiable.

The administration of digitalis in suitable doses is, with certain restrictions, as much a part of the treatment of rheumatism in children with cardiac complications as in adults.

(11) **As a Sequela of Scarlet Fever.**—Rheumatism may appear at the end of the first week or during the second week of an attack of scarlet fever, after which it is rare. The onset is insidious, and endocarditis is frequently present.

(12) **Age-Incidence.**—Rheumatism is very rare in any form in children under two years. It may even be said to be rare under three years. It is most frequent in its onset between the ages of six and nine years.

(13) **Stiff Neck and Affections of Hip-Joint.**—These conditions (the latter by Sir Thomas Barlow) have been associated with rheumatism in children. While it may be difficult to prove the connection, none will object to regard such indications as suspicious and worthy of observation and treatment, especially when found in those with an hereditary history of rheumatism and not due to other apparent causes.

While some of the many characteristics of rheumatism in children have been mentioned, it is impossible to conclude without referring to two conditions, one of which is entirely associated with the adult form, the other rarely found in childhood. I refer to hyperpyrexia and acute polyarthritis. Of the former, one case with delirium has been reported by Dr. Gee as occurring in a boy aged six and one-half years, and ending fatally.

Acute polyarthritis is characteristic of the young adult form. It is found in childhood. I have seen one case in a girl in her fourth year; but this form is not very frequent at such a youthful period, and is certainly not the most usual.

In conclusion, I would say that rheumatism in childhood differs from the adult form (1) in the variety of its manifestations, (2) in its insidious onset, (3) in the mildness of the arthritic symptoms and the corresponding severity of the cardiac troubles.

PERSISTENT CHRONIC BRONCHITIS IN CHILDREN.

BY

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In medical practice diseases of children are conspicuous by reason of their relative frequency. The general practitioner will tell you that children constitute 50 per cent. or more of the cases he is called upon to treat; the consultant will testify to the fact that his opinion is sought regarding children's ailments on very many occasions; and the public health official will point out that in his work the problem of the hygiene of the child is constantly under review. It is also noticeable that in many cases the ailments, though distressing to the children and though sources of worry and annoyance to their parents, are not immediately dangerous to life. With the adoption and development of the Act making the medical inspection of school children compulsory, one may expect an even greater number of children to come under treatment for these minor diseases. It is undoubtedly true that in the past many children who were physically defective received no medical treatment, either through neglect or ignorance on the part of their parents or guardians. It is hoped by medical inspection of school children to remedy this to some extent, but in the absence of any legal enactment compelling parents or guardians to have their children medically treated I am afraid that all the children deemed physically unfit by medical inspectors will not receive treatment.

Among those diseases which I believe will now come more prominently under notice is one which I term "persistent chronic bronchitis." Bronchitis is common to all ages, and the type varies according to age. As a general rule one expects to meet with acute bronchitis in the young, while in the old the chronic is the type conspicuously present, the chronic bronchitis being often, though not necessarily, secondary to an attack of acute bronchitis. After an attack of acute bronchitis in some children the symptoms and signs remain in a less aggravated form for weeks or perhaps two or three months. The bronchitis has in fact become chronic, but one expects all the signs and symptoms to disappear and the patient to be restored to perfect health. In some cases the bronchitis resists all treatment, the symptoms appear permanent, lasting for many months, perhaps years, and hence the descriptive word "persistent" may with perfect truth be added. It is to be noted that the bronchitis is often chronic from the very first and is not preceded by an acute attack; and, further, that the symptoms may at times become more prominent, though the bronchitis never becomes acute in the generally accepted sense. Closely associated with this variety of bronchitis is another type which may be designated "periodic bronchitis," a condition in which, as the name implies, the attacks recur periodically. The bronchitis is essentially chronic in nature and is present during most of the year, but from time to time exacerbations in which the symptoms become more prominent occur. During the infrequent spells of genial weather in spring and early summer, and in the warmer days of late summer and early autumn, the symptoms disappear, and the condition is apparently cured, only to again relapse when less favorable meteorological conditions are prevalent. The difference between the two is practically one of degree, for in persistent bronchitis the symptoms never entirely disappear, although during the warmer weather they are much less evident. It is worthy of remark that the modification in severity of symptoms is coincident with the period of prevalence of epidemic diarrhea.

Etiology.—With regard to the etiology of the condition it is found that a large number of these cases are associated with enlarged tonsils and adenoids. It might almost be laid down as a maxim that a child who is brought for advice regarding persistent chronic bronchitis should always be examined for the presence of enlarged tonsils and adenoids, especially the latter. Any condition which causes nasal obstruction and subsequent mouth breathing will, of course, predispose to chronic bronchitis. With regard to other etiological factors, many of the children are rickety, and in the investigation of these cases the stigmata of rickets should always be looked for.

In others, again, the attacks appear to be asthmatical in nature. In a few the causative factor may be referred to the child's constitution and environment. In the constitutionally weak, underfed, and neglected child, who lives in unhygienic surroundings, it is not a matter for wonder that the condition under discussion may be met with. Finally, some attacks may be referable to dietetic errors, there being an associated chronic dyspepsia. It is a little difficult to locate the proper value to the co-existence of chronic bronchitis and chronic indigestion, but from the careful investigation of one or two cases I incline to the belief that the bronchitis is secondary to the gastric trouble. I do not include under the heading of persistent chronic bronchitis cases of chronic bronchitis which may be associated with severe pathological conditions, as, for instance, cardiac disease or kidney disease, because in such circumstances the prognosis is unfavorable, and it cannot be said that there is no danger to life.

Symptoms.—Coming next to symptoms, we find that cough is generally the most prominent symptom. The cough is constant and hacking in character; sometimes it may tend to be spasmodic and occasionally paroxysmal, simulating the cough met with in whooping-cough. Expectoration may occur in older children, but is not as a rule seen in younger children. This by no means implies that it is absent, because in these young children the sputum may be swallowed. The character of the sputum is generally mucous, occasionally muco-purulent. It is never very profuse. If the child intermittently coughs up a considerable quantity of sputum then secondary bronchiectasis should be suspected. There is practically no dyspnea, although on violent exercise, such as running, the child suffers more from breathlessness than does a healthy child. These are many indefinite general symptoms. The child who suffers from persistent chronic bronchitis never looks robust and healthy. He is always pale and sometimes there is marked anemia. There is generally some loss of weight, and in a few cases emaciation may be considerable. Anorexia may be a symptom, although some of these children take their food well, and are especially fond of all kinds of sweet things. Careful investigation will often elicit the information that, in spite of an apparently good appetite, there is chronic dyspepsia. The child droops, lacks energy, and does not enter into games with his former vigor. Later the usual amusements cease to occupy the child, who sits about listless and fretful. In a few cases this lassitude and debility are very marked. In some there may be sweating at night. The temperature is seldom raised, with the exception that during the time when the symptoms become more prominent a slight rise may be noted, especially in the evening, but this never amounts to more than one-half degree or one degree F. In addition to these symptoms others referable to the condition causing the bronchitis may be found. For example, the "adenoid facies," defective hearing, mental hebetude, etc., associated with enlarged tonsils and adenoids, the various signs met with in the rachitic, and the symptoms that usually accompany chronic gastric disturbance should be kept in mind when investigating the cases.

Physical Signs.—Physical signs are irregular and indefinite, The breath sounds may be harsh and expiration prolonged. The percussion note may be less resonant than normal, and the tactile and vocal fremitus may not be so well conducted as usual. Accompaniments are as a rule in the form of general bronchi, but sometimes there may be mucous rales, especially at the bases.

This form of chronic bronchitis might no doubt be subdivided into many varieties, but for practical purposes it may be said that there are two distinct varieties—the tuberculous and the non-tuberculous. In the course of an address read before the Worcestershire and Herefordshire branch of the British Medical Association, Dr. Mary Hamilton Williams[1] made the following somewhat amazing statement:—"I believe that a chronic non-tuberculous bronchitis is rare between the ages of five and fifty, unless due to heart disease, Bright's disease, or some other pathological entity, and is extremely rare in comparison with phthisis." While it would perhaps be going too far to say that non-tuberculous chronic bronchitis in children is very common, I do maintain that it occurs in quite an appreciable percentage of cases, and that it is much more frequent than chronic tuberculous bronchitis. The opinions of Dr. Williams on the subject will probably to some extent explain the high percentage (15.4) of Worcestershire school children examined by her who were found to be affected with pulmonary tuberculosis.

Diagnosis.—The question of diagnosis between the tuberculous and the non-tuberculous is most important. At the outset I may say that I think it is quite impossible to distinguish between the two from the signs and symptoms. The most that can be said is that certain symptoms and signs suggest tuberculosis. The symptoms which should be specially noted in the differential diagnosis are marked anemia, steady loss of weight in spite of treatment, and evening rise of temperature, which is often indicated by flushed face and tired feeling. I would not include sweating at night, for my experience has been that this symptom is present in many children's ailments besides tuberculosis; and if a direct question be put regarding it, a positive answer will be got in practically every case. Dr. Mary Williams, in the paper already referred to, takes night-sweating as a symptom of early tuberculosis when qualified in the following manner:—

(1) If the sweating has existed all the child's life, it is probable the original cause was rickets

(2) If the sweating is not constant, but occurs from time to time, whenever the child catches cold (of course, excluding the results of hot drinks at night).

(3) The sweating must be on the forehead or round the neck. It may be elsewhere as well.

(4) The sweating must be worse in cold weather.

(5) Must not be due to heavy bedclothes.

It is, then, only after the most rigid analysis that the true value of this symptom can be arrived at. Some authorities have put forward the theory that fats are more easily digested in the tuberculous than in the non-tuberculous. Personally, I am not convinced of the reliability of this symptom.

Physical signs in children are notoriously unreliable, and any signs detected must be carefully analyzed. It may be that there is considerable dulness over the upper part of the lungs with alteration in the breath sounds and resonance and with gurgling rales. May not such signs in some cases be very simply explained? In young children the habit of expectorating is not a natural one. Now suppose there is mucous or muco-purulent sputum, some of it, at any rate, will tend to collect in the bronchial tubes; the free entry and exit of air into and out of the lungs is interfered with, and a condition of partial collapse may supervene. Again, in children with enlarged tonsils and adenoids it occasionally happens that physical signs at one apex or both apices may be found. These signs may be slight dullness on percussion, harsh vesicular or bronchovesicular breathing, and intermittent crepitations, and if the child is emaciated and anemic and sweats at night, phthsis is suggested to the uninitiated. I have seen cases of this nature, but after removal of the enlarged tonsils and adenoids all the signs disappeared and the patients became strong and healthy children. Would a diagnosis of pulmonary tuberculosis be correct in such cases? Symptoms and physical signs may make one suspect tuberculosis, but a diagnosis of tuberculosis on that basis simply is purely hypothetical.

Other factors have to be taken into consideration. A family history of tuberculosis, indication of other tuberculous lesions (past or present) in the child, and evidence of exposure to infection of tubercle bacilli, would assist one in deciding for or against tubercle. Sputum, if obtainable, should be frequently examined for the presence of tubercle bacilli. I have, however, failed to find tubercle bacilli in the sputum of several children who were suffering from this variety of chronic bronchitis, but in chronic bronchitis in adults I have been able to demonstrate the presence of the bacilli in a few cases, and these patients were suffering from chronic bronchitis simply, not from pulmonary phthisis as usually understood. If no sputum is available a method recommended by Blume[2] may be tried. The child is given a clean piece of glass (a clean microscopic slide will do) and told to hold it in front of the mouth when coughing. This may be coughed against for two or three days if necessary, and it is then fixed and stained for tubercle bacilli in the usual way. Again, on the assumption that the sputum may be swallowed, and endeavor may be made to detect the bacilli in the alvine discharges, a method which has been advocated by Solis-Cohen,[3] Rosenberger,[4] and others. Attempts to demonstrate the bacilli in swabs of the secretions from the upper respiratory tract have not been attended with much success, but Neild and Dunkley[5] have shown that the bacilli can be found in the saliva of a certain percentage of patients affected with "open" tuberculosis of the lungs. Rosenberger[6] has stated that tubercle bacilli appear in the blood in very early cases, even before they can be found in the sputum, and this statement has been to a certain extent confirmed by Forsyth,[7] who found the bacilli in this medium in a few well-marked cases of tuberculosis. Sutherland and Hewat,[8] however, have recently adversely critised these views.

In recent years several diagnostic aids have been advocated by various authorities, and it is to these aids that we must turn in endeavoring to make the diagnosis. The tuberculin reactions are the diagnostic weapons referred to. The literature regarding them is most voluminous, and I shall try to summarize the salient points concerning them. The general consensus of opinion seems to be that these reactions are undoubtedly useful. The subcutaneous injection of tuberculin, controlled by the estimation of the opsonic index (which by itself is valuable), is probably the most delicate and reliable of these reactions, but there is an element of danger in carrying it out and an elaborate technique is necessary. Both Calmette's ophthalmo reaction and Von Pirquet's cutaneous reaction have their respective advocates. Of the two Calmette's reaction would appear to be the more reliable, but a recent investigation by McNeil[9] gives the premier place to the cutaneous reaction. The chief objection to Calmette's test is that serious eye complications have followed the application of the test in several cases. Calmette himself naturally enthusiastically advocates the eye reaction, and at the annual meeting of the British Medical Association at Belfast he reiterated his opinions as to the value of the test, and he suggested that any injurious effects of the eye resulted from faulty technique in the application of the test. A perfectly healthy eye is, of course, a *sine qua non*, any ocular lesion contra-indicating the application of the test. In view of these occasional unhappy results many practitioners now prefer to employ the cutaneous test, and in the event of the evidence being negative to apply the ophthalmic test subsequently. It has been found that the one reaction does not interfere with the other, provided a sufficient time be allowed to elapse between the application of the two reactions. The necessary details of technique in applying these tests, and the results to be expected in positive reactions, are now so well known that it would be superfluous to describe them. The points already discussed by no means exhaust the diagnostic aids, but they are the most important and are the most practicable for carrying out in general routine practice.

It might be asked what significance is to be attached to persistent chronic bronchitis. The matter naturally circles round the question of the tuberculous or non-tuberculous nature of the condition. I am inclined to believe that tuberculous chronic bronchitis is in many instances secondary to simple chronic bronchitis, and that by prompt treatment the secondary infection might be avoided. It seems not improbable that the mediastinal glands may be infected through this route. The tuberculous process is, I believe, of a very chronic nature, and therefore it should be possible by appropriate treatment to stay the progress of the disease, and ultimately to effect a cure. There are many border-line cases, cases which cannot be justifiably termed tuberculous, but in which the process is not (shall I say?) benign. These cases are described under many vague terms, such as "physiologically delicate," "pretuberculous," etc., and the significance lies in the fact that these children may under adverse circumstances develop tuberculosis. They require careful medical supervision, and in truth merit the treatment prescribed for a truly tuberculous patient.

Treatment.—In the treatment of persistent chronic bronchitis the first point is that the causative factor must be determined and if possible remedied. As enlarged tonsils and adenoids are so constantly present it will be convenient to consider their treatment in the first place. It is necessary that they should be removed. Whatever may be said in favor of treating medically slight enlargements of the tonsils and early cases of adenoids, it is a waste of valuable time to attempt to cure them by this means when they are of long standing. Nothing except surgical interference will do any good, and it is to be noted that the efficient after-treatment is even more essential than the actual operation. Objection has been taken in some quarters to operative interference in tuberculous cases, but many on the other hand believe that in such cases this treatment is even more urgent. Mouth breathing in any case is a direct menace to the child's health, and in the tuberculous will tend to aggravate the constitutional condition. It should be mentioned that nasal obstruction, from whatever cause, should be at once treated. As soon as possible after the operation the child should begin to carry out respiratory exercises, which must be regularly and conscientiously done for many months, perhaps for a year or more. The aim and purpose of these exercises are to re-establish breathing through the nose, and after, it may be, years of mouth-breathing this is not easily accomplished. The earnest and intelligent co-operation of the parents is necessary, and much patience, tact, and sometimes firmness are called for. The doing of the exercises must be supervised by some competent person, because exercises not properly performed are of little value. The following four simple exercises are excellent, and will satisfy the requirements of most cases:—

(1) Breathe deeply and slowly in and out through the nose with the mouth closely shut.

(2) Breathe deeply in and out with the mouth closely shut, and one nostril closed by pressing on it with the finger.

(3) The same exercises, but with the opposite nostril closed.

(4) With arms held above the head, breathe deeply in through the nose with the mouth shut, and out through the mouth wide open.

These exercises should be carried out ten or fifteen minutes twice or thrice daily, but care should be taken not to tire the child. More elaborate breathing exercises have been devised, an account of some of which will be found in the *British Medical Journal*, February 11th, 1905, while any who desire further to study the subject will find the matter fully discussed in special books.

Diet.—The child's dietetic regime should be carefully investigated, and in necessary cases a suitable dietary should be drawn up. The fault may lie in habitual overfeeding or it may lie in wrong feeding. All cases will be benefited by a modified diet, and in cases secondary to chronic indigestion it is imperative that the modified diet should be strictly enforced. In general terms the reduction of the carbohydrate intake and the interdiction of sweet things are the important factors in modifying the diet. I have been in the habit of prescribing a diet similar to that advised by Dr. Robert Hutchison in chronic dyspepsia in children. The following should be avoided:—Starchy puddings, such as rice, sago, tapioca, arrowroot, and corn-flour, sweets, sweet cakes, sweet fruits, jam, honey, marmalade, potatoes, turnips, carrots, etc. The diet should consist chiefly of stale bread, dry toast with butter or dripping, eggs in any form, beef, mutton, fish, chicken, bacon, tongue, green vegetables in moderation, custard, plain puddings, stewed prunes and figs, etc. The child should be trained to eat only at meal times and should not be given anything between meals. Tea, coffee, and stimulants should be prohibited. In the absence of definite gastric symptoms I relax the restrictions somewhat, allowing more carbohydrate food, and a little weak tea, but forbidding sweet things as far as possible.

General hygienic measures are of primary importance. These children should not be treated in bed or even in the house, otherwise their apparent delicacy of constitution will become exaggerated. They should be in the open air as much as possible and should take full advantage of our limited sunshine. The rooms which they inhabit should have good ventilation, and the window in the sleeping apartment should be kept open night and day. The clothing should be of such material as to afford sufficient warmth without being too heavy. Outdoor sports, in the absence of any cardiac disability, are to be recommended. Cold sponging is invaluable; for the first few times it may be advisable to employ tepid water, but cold water should be used as soon as possible and will be found most invigorating. Sea-bathing is also good, but is contra-indicated if not followed by a healthy reaction. A change of residence is often beneficial, and the child should be sent to the seaside or country if his home happens to be in a town or city. It is a curious anomaly that a few of the asthmatical cases may be better in the town than in the country.

Medicinal Treatment.—With regard to medicinal treatment, general tonics should certainly be prescribed. Iron and arsenic or arsenic and nux vomica are excellent. Cod-liver oil may also be given and is of special benefit if there is any rachitic tendency or in tuberculous cases. A mixture of Syr. Fer. Phosp. Co. (Parrish's food) and cod-liver oil is well taken by children. In tuberculous cases the administration of small doses of creosote is good, and the creosote may be conveniently combined with extract of malt.

The cough under certain circumstances may call for treatment, but it is often found that under this general tonic treatment improvement as regards this symptom takes place. The practice of giving a stock mixture, containing most likely the ubiquitous ammon. carb., as a routine in this condition is to be condemned. If there is definite evidence that sputum is tending to accumulate in the bronchial tubes, then a stimulating expectorant may be prescribed or even an emetic may be given. But if there is no expectoration, and the cough is troublesome, then a sedative may be prescribed, because in such cases the cough is quite useless. Heroin hydrochloride is the best drug for this purpose, and may be given in doses of gr. one-forty-eighth to one-thirty-second ter die, according to the age of the child. In asthmatical cases small doses of iodide of potassium may do good, and in cases where the cough is spasmodic or paroxysmal belladonna or bromoform might be tried.

In many of these cases, and especially in the tuberculous, much benefit is derived from antiseptic inhalations. Dr. D. B. Lees[10] has recently published a paper with illustrative cases, in which he enthusiastically extols the treatment of incipient pulmonary tuberculosis by this means. He advises continuous inhalations. In applying this method to the cases under discussion in this article, I only make the child wear the respirator for an hour or two, night and morning. The antiseptics used were eucalyptus, terebene, and guaiacol, either singly or in combination. My experience has been that the general condition of the patient is much improved by this treatment.

In some of the asthmatical cases superficial cauterization of the nasal septum has been recommended, and it appears to do good sometimes. The condition of the mouth should be looked to and any carious teeth suitably treated. The presence of bad teeth appears to aggravate the bronchial conditions, perhaps owing to the suitable nidus thus afforded for the growth of micro-organisms.

This condition may offer a fresh field for those who favor vaccine therapy. I believe this treatment has been tried in asthma, but I do not think it has yet been tried in chronic bronchitis in children. For the present I should not feel inclined to recommend it except as a last resource.

In concluding the subject let me make a few remarks regarding the prognosis. This may be said to be favorable, inasmuch as the condition is not dangerous to life in the great majority of cases. Even in the tuberculous cases there i no likelihood of an early fatal termination. The tuberculous process is, I am convinced, of a very chronic nature, and, unless the child's constitution has been much undermined, there is no reason to anticipate a more acute process. In the ordinary non-tuberculous cases one may say that a cure will eventually take place. Time and patience are required, and too much must not be at once expected. After the removal of enlarged tonsils and adenoids it would be foolish to tell the parents that an immediate cure will result. This has not been my experience. Nor is it advisable to promise a permanent cure, because in a few cases adenoids and tonsils may grow again, even although the operation has been properly done. As a general rule, the symptoms will gradually disappear and in time a cure will be effected. One or two cases may resist all treatment, but these, I believe, undergo spontaneous cure at or shortly after puberty.

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A SKIN ERUPTION IN SIX CONSECUTIVE CASES OF POLIOMYELITIS.*

BY

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This skin eruption which I am about to describe appeared in six consecutive cases in the H. S. C. during a period of one and a half weeks, and has followed the same course in each case. The cause and distribution and whether or not it is associated with the paralysis yet remains to be ascertained. In reviewing the different works on poliomyelitis, there appears to be no reference to such a lesion, but in looking over the New York report of 1907 of the epidemic there, I find they have tabulated, but not fully described, different varieties of skin eruptions, as follows:

Erythema, 7; macular, 8; maculo papular, 3; papular, 18; pustular, 3; urticarial, 2; sudamina, 8; herpes, 2; petechial, 2; vesicular, 6.

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*With the consent of Dr. Baines and Machell and assistance of Dr. Goldie, I am permitted to make this report.

The form of eruption which was most common in this epidemic was papular, and it was particularly mentioned in many instances that the eruptions covered the entire body. In concluding, the article says: "Perhaps this eruption may have some significance, since it is not apt to be mistaken for anything else."

The character of the rash was fairly uniform, and the distribution seems to vary little. In all cases it appears as a small papule, quite shot-like in character, with a tiny inflammatory base. This may or may not go on to vesiculation. If it does, the vesicle is about the size of a pinhead, and looks not unlike a small chicken pock, containing a clear fluid. The vesicle also is quite hard, and those papules which terminate in a vesicle lose their inflammatory base. The rash may appear in all stages on the same patient; for example, in one area vesiculation may be present, while in another simply a papule; and then again, a small impalpable pigmented spot. The distribution is as yet indefinite, but in all cases they appear to be present and most abundant on the paralyzed limbs, and then again they seem to be scattered, but only sparsely, over the unaffected abdomen and chest, and occasionally on an unaffected upper extremity. They do not appear to follow any definite nerve segments, nor are they in the least painful to the touch.

Case 1.—The rash was present when the child was admitted, and the disease was then of four days' duration, and as far as could be noticed there was no further development of the vesicles. The temperature never rose above 99 degrees, and fell the fourth day; and on the 15th day after admission the lesion had entirely disappeared. It was present on the outer side of the right and left leg, and on the external part of the dorsum of both feet, but more abundant on the right side.

Left leg completely paralyzed. Right leg had slight movement in every direction.

Case 2.—This patient's illness was of two days' duration, and when admitted the rash was easily discernible, but did not appear on any fresh areas, and could not be seen on the 18th day after admission. The temperature fell to normal on the second day, and never rose above 99 degrees, except four days later, when it went to 101 degrees, then fell. This lesion showed a symmetrical distribution, viz., on the anterior and posterior surfaces of the right and left leg, and one or two on the dorsum of the feet; throughout, the rash was very feeble. Left leg was completely paralyzed. Right leg showed fair movement, but the reflexes were gone.

Case 3.—In this case, also, the disease had been present four days previous to admission, and at this stage presented the skin eruption, which did not show any further development. The temperature fell to normal on the third day, and never rose above 99 degrees, but during the following weeks there was an occasional rise of temperature, attributed to intestinal disturbance The rash showed typically and disappeared about the end of the second week after admission, being profuse over the dorsum of the right foot, tibial and calf surface. The right leg was completely paralyzed, the left leg feeble. Scattered papules were present over the trunk, while the rash also appeared on the right elbow and on the posterior surface of the forearm. Only a discrete papule existed on the posterior surface of the left arm. Power in both arms quite normal.

Case 4.—On admission had been ill five days, and the rash was present from the beginning, and faded at the end of two weeks after admission. This case ran almost a continuous temperature since admission, although never rising above 99 degrees, with a. m. and p. m. remissions. The lesion was present only in the form of an occasional papule and vesicle on the calf and sole of the right foot. Right leg paralyzed. Left leg moved slightly, but reflexes gone.

Case 5.—Had also been ill five days previous to admission, with a rather pronounced rash, which did not appear to form in fresh places, and was entirely gone at the end of three weeks and a few days. The temperature on admission rose to 101 degrees, but fell to normal on the 6th day, and in four days again rose to the same height, and likewise fell on about the 7th day, and from this on ran a rather irregular course. The rash was present on the anterior and posterior surfaces of both legs, chest, abdomen, and an occasional one on the upper extremities, but did not seem to be present more on one place than the other. Both upper extremities paralyzed and lower reflexes gone. Throughout, the child showed mild brain symptoms.

Case 6.—Was ill six days before admission, and showed the rash from the first, disappearing at the end of the third week, not developing any more after patient's admission to the hospital. This temperature was also very irregular, with a. m. and

p. m. remissions, not rising above 99 degrees, and even up to date the temperature is not normal continuously. The rash was typical, being present more or less all over the body, papular and vesicular, more especially on the lower extremities, anterior and posterior surfaces, and on the dorsum of both feet, over the trunk and chest, and only an occasional one on the arms. Both lower extremities paralyzed, while the upper seem normal.

The lumbar punctures, smears and cultures from the serum of the vesicles have shown no uniform results, while sections through the vesicles show the latter not to be deep-seated, as one would imagine on palpating them, but on the contrary to be only superficial, i e., between the malpighian and corneous layers of the skin; and apart from a little peri-vascular infiltration there was no other pathological change to be found.

INTUSSUSCEPTION, RECENT RESULTS AT THE HOSPITAL FOR SICK CHILDREN.

BY

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Writing in Burghard's System of Operative Surgery, Makins says: "An intussusception of any form or variety demands an abdominal section at the earliest possible moment after its detection. Treatment by inflation or injection is always untrustworthy and generally useless."

In the majority of cases this certainly is true, but when one sees a case early and makes a diagnosis promptly, before secondary inflammation has occurred, surely there are some cases that can be relieved without operation?

I have seen three such cases: one in a boy of six years, one in a babe of three months, and one in a child of fifteen months. In each case there was sudden pain in the abdomen, followed by vomiting, a desire to go to stool, straining, and bloody mucus was passed by the bowel. There was also the abdominal facies.

Upon examination, in from half an hour to three hours after the onset of the symptoms, a sausage-shaped mass was to be felt within the abdomen. In every case the patient was suspended by the feet and continuous irrigation, with a fall of about four feet, was used, while the surgeon employed taxis upon the mass within the abdomen. After the mass had diminished in size, it suddenly disappeared, and was immediately succeeded by an explosion of gas from the rectum, followed in one instance by corn, in another peas and in the third by flocculent fecal matter.

The after treatment consisted in the administration of paregoric and abstinence from food for twenty-four hours.

The majority of cases, however, come to operation, and if more than five or six hours have elapsed since the onset of symptoms *it is not safe to waste time by trying to secure reduction by injection and taxis.*

Doctor Morgan, House Surgeon at the Children's Hospital, has kindly made excerpts from the records of the hospital for the past two years. We find that there were eleven cases of intussusception for which operation was done, and of these seven were males and four females. The ages varied from three months to seven years In all but one the *onset was sudden*, with *crying and pain*, but the feature upon which most importance was placed by the parents was the *bloody mucus* in the stools, and this was present in all but one case. There was *vomiting* in all but two cases. The duration of symptoms varied between three hours and seven days. A *tumor* was felt in all but one case. *Rigidity* was absent in all. Nine out of the eleven cases recovered, and in the two fatal cases the patients were almost in extremis at the time of operation, one having been ill for four days and the other for three days. In both these cases it was impossible to reduce the intussusception and an artificial anus was hurriedly made, in the hope of saving life, when a resection might subsequently have been done.

The case in which the onset was gradual was a babe six months old, which was brought to the hospital for a tumor protruding from the anus. The case was recognized as one of intussusception, and although symptoms had been present for seven days, the bowel was easily untangled when the abdomen was opened.

The case, aged seven, in which no tumor could be definitely made out, and in which there were no bloody stools, was a peculiar one, in that, upon opening the abdomen a small intussusception was found in the ileum about four inches above the cecum, which was easily reduced. I then noticed that the ileum above this was very small, and upon searching further I found a second intussusception about two inches long and not quite so easily reduced. That was in January of this year, and since then I have operated twice in another hospital upon the same child for intussusception. On each of the latter occasions the condition occurred a few inches higher up the ileum. From the last operation, a few weeks ago, she did not recover. I rather think a recurrence of the trouble took place, but an autopsy was not permitted, the parents assuming that I knew all there was to know about that child's interior, for in March, 1909, I had operated for the relief of an internal hernia.

These are the records of a few cases of intussusception, and from them we may learn some valuable lessons:

1. The diagnosis must be made early. The chief points to be considered are: *Sudden pain*, with *absence of rigidity*, vomiting, *frequent desire to stool*, resulting in the passage of *mucus* tinged with blood, often great prostration and usually the presence of a tumor.

You will observe that I have mentioned nothing about the pulse or temperature, and my reason for so doing is that it often happens that too much weight is given to the temperature and pulse, and as a result lives are sacrificed. If the temperature happens to be elevated the case may be looked upon as an intestinal toxemia until it is too late to operate, whereas if it is normal—as is so often the case until secondary poisoning occurs—the case may be mistaken for an ordinary infantile colic and valuable time may be lost. There are a few other important things in this world besides the temperature and pulse and our eyes, our hands and our ears were given us in order that we might perceive and know them. It was intended that we should use all of these faculties or we would have been born without them.

2. As to the treatment. If an injection properly given, with the child suspended by the feet while taxis is practised, can be effectual—and I think I have demonstrated that it can if the case is seen early—then I think it is our duty to try it. If it does succeed the water used will be forcibly ejected, along with gas and either feces or some indigestible material. If this fails, do not wait a few hours, but immediately prepare for an abdominal section.

Upon opening the abdomen find the intussusception, run the fingers rapidly along it till the apex is found, then with the finger and thumb, gradually strip, or milk this back toward the cecum; when one comes to the neck or point of greatest constriction. Grasp this firmly, if there is any difficulty, and endeavor to squeeze out some of the edema from the intestinal wall, when the intussuscepted portion will readily slip back. It is perhaps wise then to put a stitch or two in the cecum to fix it, with the view of making its attachment approach more nearly to that of the adult cecum. I think it is important also to secure the point in the mesentery at which the invagination began and make a fold in it, so that at this damaged point there will be enlargement instead of a constricted part, thus preventing a recurrence of the trouble. The operation must be done rapidly, with as little exposure and as little handling of the intestine as possible.

If, as sometimes happens, it is impossible to relieve the condition, I still think the safer plan is to make an artificial anus, with a view to a subsequent resection, rather than attempt a resection at the one sitting. An enterostomy, with a Paul's tube in each end of the intestine, may be a substitute.

The secret of success, however, is an early diagnosis, and a consequent early release of the bowel.

AN IRREGULAR TYPE OF APPENDICITIS IN A CHILD.

BY

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In some respects appendicitis must be looked upon as a different disease in children from that of adult life—for there is greater difficulty in making a positive diagnosis and the disease as a rule pursues a much more rapid course.

Acute cases of appendicitis in children require, or should have prompt surgical treatment. The risk of allowing the attack to run its course in order that the patient can be operated upon with greater safety when he is well is too great to warrant such a procedure. In adults it can sometimes be followed.

Here are four consecutive cases of acute appendicitis in children, in which I operated without delay. The first was twelve hours from the initial symptoms. The appendix was perforated and lying in a bed of pus which was not walled off. The next child was seen on the second day—the appendix perforated and gangrenous and pus lying among the coils of the intestines and an acute peritonitis. The pelvis contained a quantity of pus, which gushed up through a glass tube. The third child had been ill three days—the abdomen tensely distended, no peristalsis, frequent vomiting. The appendix perforated—pus freely distributed throughout the abdomen and collected in the pelvis—wide spread peritonitis. The fourth child had been ill about 48 hours. Her abdomen was flat and soft, peristalsis active, bowels moved daily, temperature and pulse but a trifle above normal, very slight tenderness in right iliac fassa and an indefinite area of resistance or deep palpation. The appendix had perforated and was lying in a circumscribed abscess back of the cecum. This child did not seem in the least ick and at the time of operation was entirely free from symptoms. The children all recovered.

These cases show—what is so well known in the surgical service of every large general hospital—the rapidity with which the disease progresses in children and how difficult it sometimes is to form any idea of the condition inside the abdomen without actually seeing it. The symptoms are often vague, indefinite and misleading. A child may complain of pain at night, which is attributed to indigestion and his appendix may perforate in the morning while he is at school. This usually brings relief from pain. By night peritonitis may be well under way or an abscess forming.

Typical attacks of appendicitis in children can usually be recognized and treated promptly. It is the irregular forms of the disease which are accompanied by the greatest danger because of the difficulty in making an early diagnosis.

This case illustrates the difficulty. A boy of eight years was subject to slight illnesses from time to time, which were looked upon as slight disturbances of his liver—bilious attacks. A little transient abdominal pain, no tenderness, slight rise of temperature and pulse for a day or two, vomiting.

I was called to see him early one morning and found him crying with pain, lying on his left side with thighs drawn up. His abdomen was very rigid and apparently tender all over, but it was too rigid to outlive any definite area of tenderness. Turning him on his back and putting his thighs down flat increased his pain. The temperature was 102 and pulse 120. There was no vomiting. My diagnosis was acute appendicitis. I put an ice bag over his appendix and decided that an operation should be done within the next two or three hours. At noon he was lying flat in bed free from pain, abdomen soft, almost no tenderness on deep palpation in right iliac fassa—but marked tenderness over the region of the gall-bladder, which could not be palpated. The temperature gradually declined. That night the boy began to vomit and continued to do so the next day. The abdomen was flat, soft, no tenderness in right iliac fassa, but the gall-bladder tenderness persisted, although much less. His breath was heavy with acetone, the urine also contained a considerable amount of it—the child's face flushed and mottled quickly and easily, drawing a line on the skin brought out a bright scarlet streak, the usual picture of a marked acetonemia. The vomiting gradually ceased. In four days the acetone had disappeared and the patient was well.

In spite of this misleading train of symptoms I felt that the appendix was responsible for the attacks and should be removed. The family wanted to take the child abroad but it seemed out of the question to take the child to Europe or on any long journey with such a doubt hanging over him.

Three weeks later he had another attack, during which I did not see him. There was very little pain—and no definite local symptoms pointing to the appendix.

The operation was performed several weeks later when the child was well. The appendix was then found lying in the pelvis coiled upon itself with a fixed proximal third and so short a meso-appendix that it was tied with difficulty. The proximal end was naturally bent by fixation and the appendix distended on occasion. The bacterial fermentation had set up a dozen ulcers of a typical infectious type. These must have been the foci of infection in each attack. It is probable that the appendix—which was unusually long, when distended worked its way into any region of the abdomen, where its force directed it—even up into the right hypochondruin—although at operation it was formed in the pelvis.

The boy has been well since the operation, six months ago.

In a few hours one of the ulcers of the appendix might have perforated, bringing relief from pain and leaving only the tenderness in the region of the liver and gall-bladder and the reflex vomiting to mislead the surgeon. A spreading peritonitis or the formation of an abscess might then have brought the surgeon's attention once more to the appendix.

This particular case—which is only one out of many which present confusing and misleading symptoms—teaches us the care which must be used in eliminating the appendix as a factor in causing abdominal symptoms of any kind in a child.

SOCIETY TRANSACTIONS

New England Pediatric Society.

The fourteenth meeting of the New England Pediatric Society was held on Saturday, February 25, 1911, in the Boston Medical Library. Dr. John Lovett Morse in the chair. The following papers were read:

(1) The Transfusion of Infants with Glass Tubes, Beth Vincent, M. D., Boston.

(2) Public Health Laboratory, B. L. Arms, M. D., Boston.

(3) Diarrhea in Infants Associated with the Presence of the Gas Bacillus in the Stools, Arthur I. Kendall, M. D., Boston; Richard M. Smith, M. D., Boston.

The Transfusion of Infants With Glass Tubes.—Dr. Vincent said the paper describes in detail the preparation and use of coated glass tubes in transfusing infants. The technique is based on experimental work carried out in the Laboratory of Surgical Research, Harvard Medical School. Tubes 13 cm. in length and three cm. in diameter at the ends, are practical for the average new born baby. The coating material consists of a mixture of vaselene, parafine and stearin in two, two and one proportions. The paper includes the report of three cases successfully transfused by this method. In one case, the transfusion was done for post-operative hemorrhage, in the other two for hemorrhagic disease of the new born.

Dr. Risley: Discussion of Dr. Vincent's paper.

I would like to ask Dr. Vincent if he had any difficulty in using a tube which was straight and not flexible, because about a year ago I was doing some transfusion work and was attracted by an article by some New York men in which they described a preparation of carotid arteries of dogs. They took the small arteries out, strung them on two small Crile canulas and straightened them out by means of a smooth silver wire and then preserved them in a weak two per cent. formalin solution and used them from time to time in transfusion. The preparation was very simple and they could be used as long as three or four weeks after preparation. They worked pretty well with the exception that the Crile canulas were most of them a little too large to accommodate the small carotid arteries of the dogs. This gave an extra length but the tube was a little bit flexible. If the tube is bent too much the blood flow would not be as good. I wonder if Dr. Vincent found any difficulty because the tubes were straight?

Dr. Putnam: Dr. Vincent's paper.

I would like to have Dr. Vincent tell us if he has any idea as to the amount of air which entered into the artery of the baby. It used to be held that even the smallest amount of air in a hypodermic syringe could cause an embolism. Also does he know what amount of heat is necessary to sterilize these tubes by this method. Whether the boiling of the wax would be considered sufficient. We must agree that the observations and operations reported in his paper are of the greatest interest.

Dr. Lucas: Dr. Vincent's paper.

One point which I think should be brought out is the importance, in doing an operation like this, of being acquainted with the experimental side of it, because I do not think that where one has not done the operation he can realize the minuteness and care which an operation of this kind requires.

Dr. Quinby: Discussion of Dr. Vincent's paper.

It has been a great pleasure to have been able to help in a small way in this very interesting work of Dr. Vincent. It has convinced me thoroughly that from a practical surgical standpoint there is no other mechanical apparatus which will permit, with any fair chance of success, transfusion from the adult to a baby. The Crile or Elsberg apparatus are both inadequate, and even if one is exceedingly skillful in their use, I should say that the chances of success are relatively small, whereas with the tube method which Dr Vincent has used the chances are distinctly in favor of a successful transfusion. Even when the procedure is made more easy by the use of tubes, experience and practice on animals is necessary in order to acquire familiarity with a method as minute as is this. Not only are the babies' vessels small, but they are in a position, such as the groin, which makes them very difficult to get at. I think that Dr. Vincent's work is especially commendable in having made transfusion, which we all know to be of value, also practical.

Dr. Vincent:

I should think that there would be distinct advantage in using the flexible tube, but the chance to do these transfusions came in my experience at longer intervals than six weeks and you have to have something, to be practical surgically, that is always available. I dare say that one who does a great many transfusions might be aided by their use. The greatest difficulty is in getting the tube into the small vein. We generally expect to unite the tube to the father's artery without much difficulty.

As far as the entrance of air was concerned, in the laboratory, we disregarded it a great deal and did not have any trouble. The tube is very small and I do not imagine that it contains much air. This is a point which I knew, from a surgical point of view, would be criticized, so I always fill them with salt solution.

In regard to sterilization of the tube, it has been heated a great many times. Many of the tubes are not taken out of the box at all, and I answer that the heat is sufficient to sterilize them. I am not perfectly sure just what the temperature is, but in boiling the wax I know that the temperature is carried above the boiling point of water.

Public Health Laboratory.—Dr. B. L. Arms read a paper on this subject, in which he brought to the attention of the society the large scope of the work being done at the City Bacteriological Laboratory and showed wherein the practitioners might use the Laboratory even more than they are doing at present.

Dr. Morse: Dr. Arms's paper.

I should like to ask Dr. Arms just what the Board of Health is doing; how many different sorts of examinations they make, and how large a field they cover. In the examination of the sputum do you examine for anything besides tubercle bacilli?

Dr. Denny: Dr. Arms's paper.

I have been very much interested for the past twelve years in the problems to which Dr. Arms has referred, through my work in the Brookline Board of Health Laboratory, and there is just one matter in regard to the diagnosis of diphtheria that I should like to speak on. In a small laboratory where I personally know most of the physicians who send in the cultures, I hear more or less of the clinical side of the cases, and I see a fairly large proportion of the cases myself at the Board of Health Hospital. This has enabled me to get a fairly definite idea of the relation of the bacteriological diagnosis to the subsequent course of the disease. This experience has impressed on me the vital importance of making an early diagnosis and of giving anti-toxin early. Some of the physicians always make cultures in suspicious cases and often give anti-toxin without waiting for a report from the culture. As a result they seldom have a serious or fatal case unless the parent has neglected to call them in early. On the other hand, I regret to say, we see cases where the physician is called and makes no culture at his first visit. On the second day, as the case is then typical clinically, he makes the culture but waits for a report before giving anti-toxin and then often gives too small an amount to be effective at that period. Diphtheria is one of the few common medical diseases where promptness in diagnosis and treatment are vitally important. In many acute diseases delay in diagnosis is of little consequence provided we keep the patient in bed. In this disease the responsibility of the physician is very great.

Dr. Arms:

For the eleven months ending December 31, we examined about 15,000 throat cultures and slightly over 5,000 sputa, just over 2,000 typhoids, 191 smears from the eyes, 968 smears from the urethra, 340 glanders, 10 rabies, besides a good many other examinations classed under miscellaneous tests. In the sputum examinations we do not look for other organisms unless requested, although if streptococci are present this fact is reported.

We always report if streptococci are presented but do not record other organisms in mixed cultures. We do whenever requested state what we find.

Diarrhea in Infants Associated With the Presence of the Gas Bacillus in the Stools.—A paper on this subject was read by Drs. Arthur I. Kendall and Richard M. Smith. The writers conclude that apparently there exists a group of diarrhea in infants impossible to differentiate clinically from infectious diarrhea caused by the dysentery bacillus. These cases are associated with the presence of large numbers of gas bacilli in the stools. The bacilli occur insuch numbers and in such relations that it seems reasonable to believe that they are the etiological factor of the diarrhea. A simple method for detecting the presence of gas bacilli in the stools has been described by means of which it is possible within twenty-four hours to make a definite diagnosis of diarrhea caused by the gas bacillus. This diagnosis when made gives the indication for treatment with buttermilk. In the application of this method and the differentiation of this group of cases due to the gas bacilli, a distinct advantage has been made in the diagnosis of diarrhea in infants.

Dr. Smith: Drs. Kendall and Smith's paper.

I only want to reiterate what has already been said about the simplicity of the test. It takes no time to make the media up, the interpretation is extremely simple, and there seems no reason why it should not have a very wide application. It is only necessary to boil a little sterilized milk in a test tube, to which has been added some fecal matter and at the end of 24 hours look at it to see if the characteristic reaction is present.

Dr. Talbot: Drs. Kendall and Smith's paper.

This piece of work is of vast importance because it puts the treatment of the disease, that we see so much of in the summer, on a very definite and practical basis. This work and the work that was done on the dysentery bacillus is very interesting because it does not agree with what we are taught by the German schools, and I congratulate the writers on their piece of work.

Dr. Morse: Drs. Kendall and Smith's paper.

After listening to this interesting paper there are a few questions which I should like to ask. In the first place, was the buttermilk which was used last summer in the treatment of these cases pasteurized or unpasteurized? To what do you attribute the action of the buttermilk; to a direct antagonistic action of the bacteria in the buttermilk on the gas bacillus, to the high acidity of the buttermilk or to the fact that they are both organisms which live on sugars and that the lactic acid bacilli destroy the media so the gas bacillus cannot grow?

In giving the so-called buttermilk, I suppose it really was buttermilk which was made from skim milk, which consequently had a very low fat content, a moderate sugar and high proteid, the proteids being very finely divided. Now the question comes to mymind, whether the low fat and rather low sugar content of the food may not have had something to do with its action.

Dr. Rotch: Drs. Kendall and Smith's paper.

I think that this is a very important communication and one that marks a decided advance in regard to diagnosis and treatment. I only hope that what has been stated will prove to be correct. I think it would be well not to simply speak of buttermilk in the treatment but to state the special strain through which the buttermilk is produced. We know that there are a very rge number of strains which will produce buttermilk but perhaps only certain ones which may have a specific action on the bacilli producing the disease such as has been indicated by Dr. Kendall. I merely mention this because a good many physicians have found that they have gotten no results whatever from the use of buttermilk. Now that we can pick out at least one organism, which is affected by its use, we may go on and find others which will be affected in the same way.

It may, of course, eventually be proved that it is not an especial lactic acid bacillus which has a specific action on certain saprophytes but that it is the acid medium produced by the bacilli which inhibits the special organism which is producing the intestinal disturbance.

Dr. Townsend: Drs. Kendall and Smith's paper.

With regard to the gas bacillus, is there anything whatever that you can detect about the stools or symptoms that differ from those of the ordinary infectious diarrhea?

Dr. Kendall, in closing.

I would like to say a word or two about the buttermilk which is now being placed on the market. Much of the ordinary buttermilk as it is delivered to the consumer consists of milk which has passed its usefulness, which has been sent back to the factory, pasteurized, lactic acid bacilli added and churned. After the removal of the butter fat it is reintroduced to the trade under the guise of buttermilk. In addition to the lactic acid bacilli, which are supposed to be the principal agents, it also contains large numbers of putrefactive bacteria. These putrefactive bacteria may be so numerous that they actually overgrow the lactic acid organisms, and instead of obtaining sour milk one gets putrid milk. Buttermilk intended for therapeutic purposes ought not to be prepared in this way but should be milk which is soured at the earliest possible moment and then introduced to the trade. Experience has shown that pasteurization does not necessarily kill the putrefactive organisms, and in the old milk referred to the subsequent introduction of lactic acid bacteria may actually fail to bring about the desired reaction in many instances.

The buttermilk used on the Floating Hospital was prepared by the Walker-Gordon Laboratory, was unpasteurized, and contained the bacillus Bulgaricus.

There is apparently a distinct advantage in using buttermilk prepared by the method described in these cases of diarrhea caused by the gas bacillus. By using this soured milk it is possible to introduce immediately into the intestinal canal a certain amount of preformed lactic acid together with bacteria which can act upon the residual lactose of the buttermilk, thus maintaining a steady stream of lactic acid in the intestinal tract. We know that lactic acid is burned in the body, and if one relied exclusively upon the lactic acid present in the milk at the time of its administration, it is problematical how much lactic acid would be left by the time the milk reached the site of bacterial activity. By introducing, together with the lactose, these lactic acid bacilli we have in a measure a guarantee that the lactic acid will be maintained in at least a moderate concentration, until the normal intestinal lactic organisms can proliferate sufficiently.

The test consists of inoculating sterile whole milk with a small amount of the fecal material and either heating the resulting mixture to 80 degrees C. for twenty minutes, or bringing the mixture to the boiling point of water in a water bath, and maintaining it at this temperature for three minutes. If sterile whole milk is not available the test in emergencies can be made by using certified milk instead of a sterile milk. Ordinary market milk would be unsuitable for this test unless it were sterilized because not infrequently such milk contains gas bacilli. It must be apparent that the most reliable results will be obtained through the use of sterile milk.

There are a great many different strains of lactic acid bacilli in use at the present time for preparing sour milk. Certain of these organisms, and notably the bacillus Bulgaricus, have been grown in milk so long that they have actually become what might be termed milk bacteria. Furthermore, these organisms have been used for generations in certain Oriental countries for the production of sour milk, for human consumption and it is fair to assume that the use of these organisms prescribed rationally would probably lead to no harm. On the other hand, the mere fact that an organism produces lactic acid is no guarantee that it would be a useful one for introduction into the intestinal tract, and it would seem that the careless use of cultures which have not been subjected to careful scrutiny to determine their fitness for therapeutic purposes is to be deplored. If the learned doctor from Sweden, I do not remember his name, has used buttermilk indiscriminately, it is hardly to be wondered at that his results were so unsatisfactory. Experience in the past has shown that buttermilk is of benefit only in a rather limited and probably circumscribed type of intestinal disturbance. Buttermilk cannot by any means be regarded as a universal therapeutic agent.

RETROSPECT OF CURRENT PEDIATRIC LITERATURE.

Diseases of the Nervous System in Children

Under the Charge of

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The Wanderlust in Childhood.—An interesting case of "Vagabondage" in a child of 13 years is reported by Bellebrud and Froissart in the December number of the Revue de Psychiatric for 1910, (p. 507). To one who is familiar with certain manifestations of child psychology the term vagabonage, appears rather harsh in describing a case such as this boy represents. Moreover, there is implied in the term an abnormal condition of the mentality, which does not necessarily exist. One must be exceedingly cautious in interpreting these instances of what the authors call "vagabondage" in children.

This case was that of a boy of 13 with parents of mediocre calibre, the mother presenting some evidence of moral and intellectual degeneracy. The boy presented some stigmata of degeneracy in the form of marked facial asymetry and occasional attacks of vertigo and trembling, evidently of epileptoid character, and followed by headache. On one occasion a cranial trauma was accompanied by amnesia for several hours of the period immediately preceding and following the occurrence, although the child was not unconscious during this period. It is extremely probable that the trauma (scalp wound) was due to one of these vertiginous attacks.

The boy ran away from home several times previous to being placed in an asylum, and several times subsequently from the institution where he was confined, usually seeking a large town or city (Paris, Marseilles, etc.). In the majority of instances his flght followed a reprimand for some misconduct. On the other occasion he gave as his excuse a desire to see the towns of which he had heard so much.

It is noticeable that in nearly all the instances where a reprimand was given as the excuse for his flight, the plan to leave was formulated in his mind long before. This is what I desire to emphasize, and is the reason why I quote this case, which is really one of very common type. In very many of the cases seen in the juvenile courts and in truant schools, the plea of abusive treatment is raised as the cause of the truancy from home or school. In the vast majority of instances this plea is a mere pretence, and if the child is afforded an opportunity to tell the tale sufficiently, often they finally come to believe it themselves.

There probably never existed a child of normal intelligence, who has not at some time conceived the idea of running away. The conception has nothing to do with environment or treatment. It may and does occur with children situated in the best possible environment, surrounded by nothing but kindness. The carrying of the idea into actual performance is the only thing that is really precipitated by a grievance. Hence the carrying out of the dream is seen more often in that class of children exposed to severe punishment or reprimand, and especially unreasoning and unjust punishment proceeding from ignorant parents or guardians. Nevertheless, in the supersensitive child even a just correction, or a fancied injustice or slight, may be sufficient to precipitate the consummation of the idea. The idea, however, is always pre-existent, merely awaiting an excuse that to the child mind is a sufficient incentive to its realization. While the idea is practically always pre-existent, its actual realization is dependent not only on an inciting stimulus, but the power of such inciting cause to precipitate action is strengthened or weakened by the degree of attachment and affection awakened in the child by its environment. While the majority of run-a-way children attribute their act to some specific grievance, we occasionally see the idea repeatedly carried to consummation by a child under the best of conditions, and absolutely without real or fancied grievance. If careful investigation shows this to be the case, we then have before us a child in whom the Wanderlust is so strong as to overcome the bonds of affection, comfort and fear. In such a case we really have presented in a child the incipient elements of what we see in the confirmed adult wanderer. To such a child we might almost apply the term so easily and incorrectly employed by certain writers to describe the spirit of the Wanderlust in general.

Curiosity, that most valuable hand-maiden of education, plays its part in the Wanderlust of the child mind; but the impulse is really much more deeply rooted in the human mind. It must be recognized as an attribute of every normal adult, cropping to the surface in spite of all the complex duties and interests of modern life, appearing from the vast subconscious strata of the mind, occurring at times with strange insistence, as an ill defined longing for freedom and change. There can be no question that this vague unrest is subject to seasonal influence, at least in the adult. Whether it is so in the child, or whether the "eternal springtime" of childhood keeps the embers ever glowing is not known. In some children the idea of leaving home is connected not alone with this vague subconscious impulse, and the incentive of curiosity, but is accentuated by a spirit of adventure. The child may be impelled either by a desire to emulate the lives and acts of those of whom they have heard or read, or they may be actuated by a spirit of venturesomeness, unable to define just what it is they wish to do with their freedom when they obtain it. This was the incentive in the case of some children who carefully hid stores of bread and butter in the library desk, anent the day when they should realize their longing, which was never realized in their case. These children were surrounded by every comfort and happiness that parental understanding and devotion could furnish, and were absolutely without grievance of any kind. In consummating the longing, it is surprising to what discomfort children will submit. I remember an instance in which a ten year old girl used to run away from a home where she received every kindness, and, on one of these occasions, came some ten miles to the city, and for a week slept on the pavement under an old stairway, behind a saloon, without protection of any sort, obtaining her food in the day time wherever she could induce anyone to give it to her. In a long and sympathetic interview with this child I was absolutely unable to elicit from her any other reason than that she "wanted to go."

Once in a while we meet with a case of vagrancy in a child that presents features of a character that exceeds the bounds of the normal, and may even suggest an automatic impulsive idea in which reason is not always evident. In a boy of ten a reprimand, or fancied ill treatment, produced sulkiness and sullenness at the time, but no other response. Awaiting his opportunity when the family were away, perhaps several days later, he would return to the house from school or elsewhere, break in and destroy some single article of furniture and run away. This occurred repeatedly and in always the same order of procedure. A single object only was destroyed, the house was always first broken into, and the flight followed. Unfortunately I did not have the opportunity of examining this child, and therefore cannot say whether there were physical or mental stigmata or not. Revenge may have prompted his acts, but usually in such cases subsequent revengeful acts show a certain degree of elaboration and inventiveness, not shown by this boy. The field of investigation is one of exceeding interest and taps the very depths of the fascinating domain of child psychology.

Diseases of the Alimentary System

Under the Charge of

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Congenital Obliteration of the Bile Ducts.—(*British Med. Jour.*, Dec. 31, 1910). Weber and Dorner report a case in a female child six months of age, who had jaundice of the obstructive type with complete absence of urobilin from the urine and feces. Liver and spleen were both enlarged. The necropsy showed that the distal part of the hepatic duct, the cystic duct, and the common bile duct were represented by connective tissue cords without any lumen, but the cord representing the choledochus could not be traced as far as the duodenum. The gall bladder contained a little slimy, colorless matter. The liver was green in color, the cirrhosis being of the unilobular type.

Case of Fatal Trichocephaliasis in a Child.—(*British Med. Journ.*, Dec. 3, 1910). Jamieson and Lauder report this case occurring in a well-developed girl aged five years. She gave a history of vomiting after breakfast, was easily tired, felt sleepy, and was developing a rash upon the legs. Many spots of purpura were found upon the body, legs and neck, and one or two in the mouth. A soft systolic murmur was heard all over the precordia. The spleen, liver and lymphatic glands were not enlarged. There was no history of diarrhea or the passage of worms. These symptoms were not urgent but were recalled by the parents after the illness. Calomel and thymol were given and in the feces no worms were found, but multitudes of the eggs of the trichocephalus dispar were present. No blood was present. The child went on from bad to worse, dying in a camatose condition. This parasite has been considered without medical interest and innocuous.

Congenital Pyloric Stenosis.—(*British Med. Journ.*, Oct. 8, 1910). Hutchison in the Schorstein lecture is of the opinion that all cases should be treated medically first. He can find no satisfactory means of differentiating the surgical from the medical without preliminary treatment. He warns against the carrying on of the medical treatment too long and states if there is no improvement or if the child's strength is waning the case should be immediately handed over to the surgeon.

The Dwarf Tape Worm in American Children.—(*Colorado Medicine*, Dec., 1910). Amesse says that this is the smallest tape worm known to infect man, measuring five to forty mm. long and one-half to one mm. wide consisting of 100 to 200 segments. Its normal habitat is the small intestine of rats and mice. In its development it is distinctive in that it needs no intermediate host. The size of the worm precludes the possibility as its acting in a harmful manner through purely mechanical effects. The ill effects being due to a toxin. Fifty per cent. of the children infected show visible signs of disease. He reports a case from which were expelled more than 750 of these worms at one movement.

Ipecac in the Treatment of Intestinal Amoebiasis.—(*American Jour. of Med. Sci.*, Nov., 1910). Walter V. Brem advocates the administration of very large doses of the extract in pill for these cases. He cautions regarding the salol coating which must be just thick enough to avoid any nausea and not so thick as to pass through the intestine undissolved.

Lactose and Lactic Acid in the Stools of Children Suffering From Green Diarrhea.—(*La Clin. Infant*, Aug., 1910). Lavialle says that lactose given in large doses for a short time caused diarrhea, during which time lactose was found in the stools and urine. In green stools lactose is found in excess of the total ingestion of this sugar, and where it is absent lactic acid is found. The presence of these two substances seems to result from the rapidity of the intestinal transit. The author believes the role of lactic acid may be to excite the secretion of certain glands, or to facilitate the breaking up of certain substances and to further the activity of the digestive ferments. He insists that it is most active in keeping the nature of the bacterial flora at a certain standard by promoting a tendency toward certain micro-organisms, thus explaining the value of the administration of cultures of various lactic-acid forming bacteria.

A Case of Biliary Colic Occurring in a Child, Followed by the Passage of a Gall-Stone.—(*Indian Med. Gaz.*, 1910). Gleeson reports a case of a girl 21 months of age seized with an attack of colic in July having recurring attacks one each month for five months. After the last attack she passed a gall-stone the size of a pea. Jaundice developed after the passage of the stone. The child eventually recovered.

Chronic Appendicitis in Children.—(*Arch. de Med. des Infants*, June, 1910). Comby reviews 139 cases of children in which chronic appendicitis was diagnosed. He believes the condition to be much commoner than is usually supposed. Periodical vomiting he consideres as premonitory of acute appendicitis. Among the symptoms mentioned are constipation, though rarely he states there may be diarrhea, intercostal neuralgia, pain in the right leg with a tendency to limp, children are moody, disinclined to play or work. In another class there is a tendency to faintness and pallor. Headache, convulsions, urticaria and prurigo were seen in another group. All these conditions immediately cleared up after appendicectomy.

A Case of Mega Colon.—(*Nord. Med. Ark.*). Meyer records a case in a boy aged four and one-half years. Since birth the child had been constipated but the real symptoms of Hirschsprung's disease appeared at six months of age. Meyer concludes from this that at this time a twist had formed in the sigmoid flexure, giving rise to coprostasis followed by meteorism, dilatation and secondary hypertrophy of the large intestine. The child was put upon a laxative diet and treated with large enemata given through a long and broad rectal tube. No improvement occurred and the patient was sent home where the treatments were continued. He returned to the hospital at six and one-half years of age where he was again treated with large injections of water and recovered in a few months. Meyer holds that the second course of treatment was successful because the patient had reached the age when physiological involution of the sigmoid takes place. Meyer holds that there are two forms of Mega colon, one congenital with a bad prognosis and the otheran acquired variety in which the prognosis is good.

Remote Symptoms From Intestinal Irritation in Infants and Children.—(*New York State Med. Journ.*, Mar., 1910). Frost points out that intestinal intoxication and irritation is an important etiological factor in many apparently remote symptoms. Certain minor psychoses may occur as a result of this in children who, from heredity or minor psychoses are of unstable nervous mechanism. Among these are included 12 cases of pica, four of pseudo masturbation, many cases of nail biting and numerous other so-called bad habits, such as eneuresis, fecal incontinence, squints, head-nodding, etc. These cases he considers a parallel to the hysterias of later life. Cyclic and tetany vomiting he also includes within this group of neuroses due to intestinal disturbance. He found casts and albumin in the urine of many of the more acute cases. Of affections of the skin which he ascribes to this condition are angio-neurotic edema, eczema, erythema nodosum, urticaria, pruritis, etc. He calls attention to the frequency of pharyngitis occurring in these children.

Intestinal Infections in Children.—(*Med. Record*, 1910). Winters says that ninety-eight per cent of the deaths of infancy occur in the tenement house districts and are consequent upon wrong feeding. To the injudicious feeding he ascribes a proneness to infections which may prove rapidly fatal from the condition within the intestine. He advocates for the initial clearing out of the bowel a large dose of ice-cold castor oil. For the vomiting he believes there is nothing so efficacious as hot water given in very small quantities. He limits the diet for a considerable time to water. This is followed by an alkaline cream dilution. The increase in the food proportion is done by first giving the top half ounce of a quart of milk, then the top ounce in dilutions according to the age of the child.

The Treatment of Severe Forms of Infantile Atrophy.—(*La Clin. Infant*, May, 1910). Variot strongly advocates the use of superheated milk which is homogenized. He believes the superheated milk contains a modified casein that is rendered more easily digested by the child. The homogenization emulsifies the fat in such a manner that it forms a kind of predigestion which facilitates the use of this milk by even the most feeble and atrophic children. In severe atrophy this milk may be given pure if the patient is six months of age or over, below this age one-quarter water with a little sugar should be added. If there is vomiting he adds four grains of citrate of soda to each bottle.

Training in the Constipation of the Young.—(*Ther. der Gegenwart* July, 1910). Budberg calls attention to the fact that constipation is rare among children of the East. Their regular habits of defecation are inculcated from the birth of the child. When the child awakes in the morning the mother takes the buttocks of the infant between her two hands and holds the child up with its back towards her, pressing its thighs against the abdomen and supporting its back with her thumbs and knees. The infant is thus induced to strain on account of the position, and is further coaxed to do so by the mother. In China and Japan children of even two months of age are kept clean and dry, while the ills of constipation are averted.

Diseases of the Skin and Uro-Genital System

Under the Charge of

EBERHARD WILLIAM DITTRICH, M. D.

Instructor in the Diseases of the Skin, New York Post-Graduate Medical School and Hospital; Dermatologist German Odd Fellow's Home and Orphan Asylum; Physician, Northwestern Dispensary-Dermatology.

Dermatitis Fibrinosa Faciei.—Dr. E. Moro Munchener, (*Medizinische Wochenshrift*, Feb. 7, 1911), in a paper read before the Munich Society of Pediatrics, Dr. Moro calls our attention to lesions on the face of infants, which heretofore were generally considered to be impetignious in nature. They are small, their size varying from that of a millet seed to a lentil. They are always round, rarely oval and are surrounded by a narrow inflammatory halo. Chin, upper lip and introitus nasi are chiefly effected. At times they may be also seen on the cheek. They have a central disk of a yellowish color. An attempt to detach this is difficult and painful and there is bleeding from the underlying surface. He consideres aphthous stomatitis the cause of the above described eruption and would call it a dermatitis fibrinosa. He says that these lesions are very common in children suffering with apthous stomatitis occurring in about one-half to one-third of all cases.

Cutaneous Hemorrhages Caused by Artificial Hyperemia: A Diagnostic Aid in Scarlet Fever. Dr. C. Leede, (*Munchener Medizinische Wochenschrift*, Feb. 7, 1911). From the author's experience with several hundred cases of scarlet fever it would seem that the resistance of capillaries of the skin is greatly reduced by the scarlet fever poison.

In almost every case, in which Biers hyperemia was produced by the application of a rubber band to the arm more or less extensive cutaneous hemorrhages were observed on the flexor surface of the elbow. This phenomena could be seen about 10 to 15 minutes after the application of the bandage.

In measles there was also a tendency to develop hemorrhages, but it was much weaker and the petechial hemorrhages appeared much later, first in the eruption and then on the normal skin.

Author claims that a negative result in a suspicious case would speak decidedly against scarlet fever, while a positive outcome considered together with the other symptoms would be of undoubted value. The technique is as follows: A broad rubber band is applied around the arm in a manner, that the veins become very conspicuous and the forearms and hands cyanotic, while the pulse can be felt plainly. After 10 or 15 minutes the bandage is removed. If we put the very tender skin of the flexor surface of the elbow on the stretch in order to render it anemic the hemorrhage will be seen as very fine dark points.

Scarlet Fever, the Mode and Cause of Its Transmission and Spreading.[Dr. Jacob Sobel, (*New York Medical Journal*, Oct. 1, 1911). In an elaborate paper on the above subject the author arrives at the following conclusions:

1. He recommends that public instructions be given to mothers by public lectures or by articles in the daily papers concerning scarlet fever and its infectiousness. Severe cases may be the consequence of contact with very mild attacks.
2. Suspicious cases should be isolated and observed for at least 21 days.
3. Cases in people who directly or indirectly are employed in the milk business should be reported immediately.
4. All dogs and cats that are liable to come in contact with the patient should be removed and not allowed to be returned to the house, until they have been cleaned thoroughly in an antiseptic manner.
5. Class rooms should after the mere presence of a case, either erythematous or desquamative, be disinfected; all school or other books, toys, etc., with which the patient came in contact should be treated likewise.
6. There should be a blackboard in each class room with the names and addresses of all children in whose family there is danger of infection. A name should only be removed, after the child had returned to school by permission of the physician.
7. Anointing of the body with petrolatum, lanoline or ichthyol ointment and frequent bathing in hot water during the period of desquamation will diminish the danger of infection.
8. There should be a disinfection of all infected rooms and all bed clothes.
9. Enlarged tonsils, adenoids, carious teeth, and catarrh of the nasopharynx should be treated in time.
10. Any discharge from the ears, nose and throat is to be considered a source of infection. It should be removed with pledgets of cotton, which then should be destroyed by burning them.
11. Fresh air in the sick room, sunshine and moderate temperature are conditions which favor the neutralization of the scarlatinal poison.
12. Nobody should be vaccinated in a house infected with scarlet fever.
13. Strict measures should be taken to compel people to report all cases of scarlet fever.
14. Sufficient means for the employment of sanitary inspectors and disinfectors should be available in any community.

The Incubation Period of Measles.—Dr. M. Sebilleau, (*Semaine Med.* 1910, No 25). The author says that generally not enough weight is given to the manifestations of the incubation period of measles. Abdominal pain and slimy frequent stools should be mentioned besides the usual prodomal symptoms.

The sudden inflammatory reaction of the respiratory tractus, the cause of which at first is obscure is quite characteristic for measles especially when associated with swelling of the lymphatic glands.

The latter phenomenon may occur with only moderate fever. The glandular involvement increases during the eruptive stage but disappears during reconvalescence.

Infant Feeding in Health and Disease

Under the Charge of

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The Finkelstein-Meyer Method of Infant Feeding by "Casein Milk."—Dr. Jerome Leopold in the Archives of Pediatrics outlines the method of preparation of this milk, giving also the indications when it should be used as a food.

This milk is prepared on the theory of Finkelstein and Meyer, who think that the nutritional disturbances are due to the sugars and salts in the milk. Casein, it is thought has no more ill effects than plain water. The statements of Finkelstein are based on experimental and clinical observations.

The "Casein Milk" contains very little salts and sugars and a large amount of fat and casein. It is prepared in the following manner:

(1) Make whey by heating one quart of full milk to 100 degrees F. Add four teaspoonfuls of essence of pepsin and stir. Let this mixture stand at 100 degrees F. until curd has formed. This usually takes place in about one-half hour.

(2) Filter off the whey by means of a linen cloth. Hang up the cloth with the remaining curd for one-half hour to be rid of the remaining whey.

(3) The curd is removed from the cloth and is pressed through a rather fine sieve, two or three times, by means of wooden mallet or spoon. One pint of water is added to the curd during the process. The mixture of the water and the finely divided precipitate should now look like milk.

(4) To this mixture add one pint of buttermilk.

The mixture resulting from the combining of the buttermilk with the solution containing the finely divided precipitate is put into bottles and on ice. When the feeding time comes, the bottles are warmed as usual. Feedings are given every three or four hours.

This food is indicated in infants with intestinal disturbances, i. e., in cases of enteritis (dyspepsia), atrophy (decomposition), and in cholera infantum (intoxication).

"Casein Milk" should be given in small amounts in cases of enteritis and in larger amounts in cases of atrophy. There is usually a loss in weight during the first few days that this food is given. The stools become homogeneous, however, and the temperature, if it has been elevated, drops to normal. After the stools have become homogeneous a small amount of sugar is added to each feeding—at the beginning not more than one-half ounce to one ounce for the entire day's feeding.

In most cases a gain in weight results after the sugar is added. Gradually the amount of each feeding is increased and more sugar is added. Dr. Leopold states that a combination of maltose and dextrine causes the least disturbance in infant feeding and that lactose should not be used in milk dilutions. Saccharose is much less injurious than lactose.

The casein feeding is kept up for weeks or months—until the intestinal disturbance has entirely disappeared and the infant has gained in weight. Then the regular milk mixture may be resumed. No cathartics are used before or while this food is given.

Finkelstein and Meyer use buttermilk in the preparation of this food because, (*a*) it contains a small amount of sugar, (*b*) to obtain the good effects of lactic acid, (*c*) because buttermilk can be kept for a long time without deteriorating.

The composition of "Casein Milk" is:

Proteid	3%
Fats	2.5%
Sugar	1.5%
Salts	0.5%

One quart of "Casein Milk" yields about 370 calories.

Dr. Leopold states that this method of feeding has been used at Post-Graduate Hospital in New York with quite some success and hopes to be able to report the results when the number of cases fed on this milk has increased.

Human Milk.—Few practitioners realize the great value of human milk for babies or at least if they do so theoretically, we find that the practice of many does not uphold such belief.

To nurse a child at the breast is such an old fashioned and commonplace habit and the patent baby food is so convenient and well advertised, that when the mother's milk shows signs of being inadequate, it is so easy for the doctor to say, "Wean the baby and put him on So and So's food," and then think that he, as the physician, is relieved from responsibility.

By so doing he has robbed the babe of his birthright, without an effort to remedy natural conditions. He has taken away a vitilizing and life-giving food for which no substitute of equal value can be found. We all must know that there are certain anti-toxic and immunizing qualities in mother's milk which make the child stronger and more resistant to disease and which are contained in no other food.

For that reason even small amounts of milk are better than none. If the mother can nurse the babe only once or twice a day by all means use what is available and do not cut the child off entirely.

But, with encouragement and kindly advice from the physicians many more mothers than at present, could conserve, increase or enrich their breast milk and thus many more babies' lives be saved. For, it is the artificially or bottle fed babies from which the high infant mortality comes and not from the breast fed ones. In order to have the mother's milk adequate, the physician must keep this object in mind during pregnancy and during confinement and especially during the months succeeding the birth of the child.

It is needless to go into all causes of breast milk failure, but the principal ones are anaemia, worry and physical fatigue from overwork or loss of sleep. These are conditions which usually can be overcome or prevented.

Then the diet of the mother can be changed if necessary to make her a better milk producer, but do not give her beer or alcoholics for such purpose.

To those who have never tried it, a good sized bowl of corn meal or oatmeal gruel given to the mother twice daily will work wonders with the milk supply.

But, some one asks, what about those cases where the mother's milk does not seem to agree with the baby? Those cases also are more apparent than real, and can be overcome by careful management. Usually the baby is nursed too often, or the mother's milk is too rich in cream and can be diluted by giving the child a small amount of water or barley water, before each nursing, or the child is constipated or there is a lack of outdoor exercise and air for the babe or mother, or there are other faults which can be corrected.

In any case we should not give up nursing the baby until we have made even more of an effort to keep him at the breast than we would make to keep him on the bottle.

And when the mother's milk really does begin to fail and it is insufficient to make the child gain in weight properly, it is the much better plan to substitute one or two bottles of diluted cow's milk for the same number of breast feedings and keep the child at the breast the rest of the twenty-four hours and not wean it entirely.

In other words, until the child is six or eight months old use what breast milk is available and do not destroy or take away Nature's own source of food supply without an intelligent and persistent effort to remedy conditions.—*Editinne Diailatte Med. Journ.*

Acidified Milk in Pediatric Practice.—J. M. Brady, (*Arch. Ped.* June, 1910), reports most favorably upon the use of acidified milk in feeding about 400 infants in St. Ann's Infant Asylum, some perfectly healthy, others with malnutition or intestinal indigestion. The acidified milk feeding was begun in July as a prophylactic of gastroenteric intoxication. In hot weather the milk was boiled before being inoculated. In preparing the acidified milk the fresh milk is inoculated with the lactic acid bacillus and then allowed to ripen for twenty-four hours by standing in a warm room; it is diluted with barley water to the desired strength, and in order to raise the caloric value to the needs of the infant, a tablespoonful of cane-sugar is added to the quart of the mixture. For young infants one part acidified milk, two parts barley water, a tablespoonful of cane-sugar to the quart of the mixture was ordered. Older infants received one-half and two-thirds acidified milk with barley water; malt sugar was also used in place of the cane-sugar when the gain in weight was not satisfactory. Where there was an intolerance of fat, skim milk was used. A failure to gain in weight with good digestion was met by the use of top milk. From the first, results were striking; young infants two days old received this seemingly irrational food and throve on it. Cases of intestinal indigestion with much mucus in the stools did particularly well. No difficulty was experienced in returning to a modified milk diet when the first formula was made somewhat weak.

Undiluted Citrated Milk for Malnutrition.—F. Langmead, (*Proc. Roy. Soc. Med.*, May 10, 1910), has obtained most satisfactory results in 80 consecutive poorly nourished infants varying from three weeks to four months of age, fed with undiluted citrated milk at Paddington Green Children's Hospital. All gained weight. One died of epidemic diarrhea. Two grains of citrate of soda are added to each ounce of the undiluted milk, usually in the form of a watery solution, one dram of which is added to each feeding after bringing the milk to the boil. The child is weighed at first weekly and subsequently every two or three weeks and the amount of milk is adjusted according to the baby's weight and general condition and the mother's account. Citration is gradually lessened at about five months and can usually be omitted altogether at about six months except in particularly delicate babies. One of the chief advantages of this method of feeding is its simplicity. The disadvantages of dilution, the bulkiness of the feeding, the complexity of frequent variations, the changes of artificially preserved or thickened cream, and of giving too little fat are evaded. The chief objection is the excess of proteid; but this excess is simply passed by the bowel. Constipation does not seem to be more common than with other methods of feeding. Thirst is easily relieved by water between the feedings. Citrated milk is, of course, not suitable for those rare cases which will not tolerate any milk or in epidemic diarrhea, and is not any advantage in cases of hypertrophic stenosis or other obvious organic cause of malassimilation. Acid dyspepsia as a cause of want of development calls for sodium bicarbonate in addition to the citrate.

Infectious Diseases

Under the Charge of

ST. GEO. T. GRINNAN, M. D.

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The Door of Entry of Tuberculosis in Infants.—V. Hutinel, (*Arch. de Med. des Enf.*, July, 1909), discusses the various methods of entrance of the tubercle bacillus in the nursling, each of which has been considered by different authorities as the most frequent point of entry. The author, after weighing the evidence for the intestine and the tonsils, concludes that the most frequent method of entrance of the bacillus is by inhalation into the lungs. That tuberculosis of the intestine does occur is well known. But if this were in most cases the method of entrance, and were the intestine the site of the primary lesion, the amount of infantile tuberculosis should have decreased with the use of sterilized milk, which has not been the case. Tuberculosis of the mesenteric glands is much less frequent than that of the bronchial and mediastinal glands. Within the last few months Morst has published his results from injecting the lymphatics in man and animals. He states that there are no communications between the cervical lymphatics, superficial or deep, and the subclavicular or pleural ones. The lymphatic chain which receives the products from the nose, mouth, pharynx, and tonsils opens into a trunk which debouches into the jugular vein. He finds that there are no lines of communication between the intestine and the pulmonary lymphatics. When the lung becomes infected from the intestine the bacilli must pass by way of the blood current. The bronchial glands are almost always the primary source and connected with a pulmonary focus of tuberculosis. Escherich believes that living with an adult phthisis case is generally the cause of the pulmonary infection, dust or droplets being the nethod of carriage of the bacilli. In a fewcases the germs may be carried by the hands into the mouth. During the last eighteen months the author has studied nineteen cases of tuberculosis in infants under one year. In all these cases the intestinal glands were affected, generally swollen or caseous, but all these children may have swallowed the bacilli in their own sputum. Tuberculosis occurs in the intestines in about one-tenth of the cases. Aerogenous infection is by far the most frequent.

Pulmonary Tuberculosis with Cavities in Children.—E. Gaujoux, and Brunel, (*Ann. de Med. et Chir. Inf.*, June 15, July 1 and 15, 1909), comment upon the supposed rarity of cavitiesi n pulmonary tuberculosis in children. They find that this is not a rare condition at all. The diagnosis is not easy to establish. In 1,000 autopsies on children there was tuberculosis in 360; in 250 tuberculosis was the direct cause of death. Marfan considers that many cases of tuberculosis in adults are the result of recrudescence of apparently healed tuberculosis of early life. The younger the child the more diffused is the tuberculosis, the more organs are attacked. The authors examined a large number of cases ot cavernous pulmonary tuberculosis and give the histories of a number of typical ones, with a summary of fifty. There are three classes of cases with parenchymatous cavities; caseous pneumonia which causes large cavities lined with masses of degenerated tuberculous material; rapid broncho-pneumonia with or without general miliary tuberculosis, and chronic tuberculosis of the lungs with a tendency to cicatrization. Chronic tuberculosis rarely occurs, and causes cavities in the regular course of its evolution. In bacillary pneumoniacausing death, several large cavities are frequently found in the substance of the lungs, resulting from the softening of large masses of caseous tuberculous tissue.

Scarlatina.—A preliminary report on the importance of bacteriological examination in scarlatina of an early bacterial examination of the secretion from the post nasal region. Dr. Ernest Schultze, of New York City, has presented very interesting data on this subject in an article published in the Medical Record, Dec. 10, 1910. The very interesting conclusion is pointed out that the danger of infection in scarlatina is harbored in the throat and nasal passages and not the scales from the period of desquameatina. Dr. Schultze describes a coccus, which he found to be present in 459 out of 555 cultures taken from throats of scarlet fever patients. The work done by Dr. Schultze extends over a period of three years and his investigation covers thousand cases examined. His conclusion, that the source of infection is not the scales is very interesting and seems a correct conclusion.

Ventilation of Schools.—Dr. W. A. Evans advocates lowering the temperature of the school room to 68 degrees F. and raising the humidity to 60 or 70 by introducing steam into the columns of incoming air. (*The American Journal of Obstetrics and Diseases of Women and Children*, p. 956.) He advocates reducing the dust from blackboards by using an eraser, which is slightly damp. At recess the foul air should be blown out. The room should not be heated and ventilated by the same air, unless the hot air is put in high and taken out low by exhaust fans. In warm climates the radiator can be raised one foot above the bottom of the window, so that when the window is raised the cold air is warmed by contact with the radiator.

Influenza in Infants.—It is well to remember that infants are frequently affected with influenza, as pointed out by S. Weiss, (*The American Journal of Medical Sciences*). A seven months old baby will have the same symptoms as an adult. The disease is very contagious and one infant will infect a whole ward full of children. Aspirin seemed very beneficial in the early stages of the disease and in the relapses quinine was most effective. So frequently does reinfection take place that one institution was closed for disinfection. In children with weakened digestion influenza proved very fatal.

Personal Experiences With a Few Cases of Pellagra.—Paul V. Anderson, of Morgantown, N. C., describes nine cases of pellagra observed by himself. The pathology is indefinite, marked changes not appearing until the disease has existed for some three years. They are in the nature of atrophy and fatty degeneration of heart, spleen, liver and kidneys, with ulceration of the intestines and hyperemia. In the nervous system we may find hyperemia, edema, or anemia, with degeneration of the motor ganglia, especially the anterior cornua, obliteration of the spinal canal, and inflammation of the meninges. The disease may be acute or chronic, appearing in the spring, and terminating fatally only after several years. Gastro-intestinal symptoms are first noted, some weeks before erythema appears. Diarrhea results later in the disease. Nervous symptoms appear early in the disease, as headache, vertigo, and tenderness along the spine. Mental disturbances appear only later, during the second or third attack. Delusions are varied, generally depressive; memory and comprehension are reduced, and there is disinclination to any sort of action.—*Medical Record*, March 26, 1910.

The Local Hospital Sanatorium as One of the Most Important Phases in the Anti-Tuberculosis Crusade.—S. Adolphus Knopf, of New York, advocates the creation of hospital sanatoria in all communities, in which the tuberculous may be treated near their homes and relatives. They should be maintained as health resorts, and be suited to the fresh air, hygienic and dietetic treatment of the disease. Consumptives would then no longer be a danger to the neighborhood and a burden to their relations. They would learn how to take care of their sputum and be supervised and made to be careful. The hospital sanatoria would be both efficacious and successful in the care of the consumptive poor.—*Medical Record*, May, 21 1910.

BOOK REVIEW

Studies in the Psychology of Sex. Volume VI. Sex in relation to society. By Havelock Ellis, L. S. A., (England); Fellow of the Medico-Legal Society of New York and the Anthropological Society of Berlin; Honorary Fellow of the Chicago Academy of Medicine, etc.; General Editor of the Contemporary Science Series since 1889. Extra cloth, $3.00, net. Philadelphia, F. A. Davis Company, 1914-16 Cherry Street, publishers, 1911.

In the previous five volumes of these studies of the Psychology of Sex, Dr. Ellis has dealt mainly with the sexual impulse in relation to its object, leaving out of account the external persons and the environmental influence, which yet may powerfully affect that impulse in its gratification. In the present volume, however, where social traditions necessarily come in for consideration and where a discussion of the growth of these traditions in the past and their probable evolution in the future are necessary, the author proceeds to his subject with that clear understanding, which has distinguished his writings in the past. He records in this volume, not only what people actually feel and do, but what he thinks they are unconsciously tending to feel and do. Dr. Ellis, in this volume, Sex in Relation to Society takes up practically a neglected field and he finds it necessary to expend and elicit care and precision, which on many points have never been expended before on these questions. The subjects clearly and explicitly discussed in this volume cover the following subjects, viz.: The Mother and Her Child, Sexual Education, Sexual Education and Nakedness, The Valuation of Sexual Love, The Function of Chastity, The Problem of Sexual Abstinence, Prostitution, The Conquest of Venereal Diseases, Sexual Morality, Marriage, The Art of Love, The Science of Procreation. The subject of every chapter in this volume could easily form the topic of a single volume and the literature of many of these subjects is extremely voluminous. The author has very satisfactorily culled from the literature of the past, the essential details and has placed each subject by term, as clearly and succinctly as it is possible to do in relation to its fundamental principles on sexual psychology to those interested in the study of the psychology of the sex.

This is a very valuable and interesting work. It is fully comprehensive and its merits are numerous. Whatever may be the doctor's inclination—moral inclination require that he posses a knowledge of these conditions and their proper treatment, and we know of no author more competent to write on this subject than Dr. Ellis, whose work answers the demand for a work of this character so satisfactorily.

A Text-Book of Chemistry. For students and practitioners of medicine, pharmacy and dentistry, by Edward Curtis Hill, M. S., M. D. Medical Analyst and Microscopist; Professor of Applied Medical Chemistry in the Medical Department of the University of Colorado; Special Lecture on Chemistry in the Colorado College of Dental Surgery; Chemist of Food and Drug Division, Colorado State Board of Health; Collaborating Chemist, United States Bureau of Chemistry; Consulting Physician, St. Anthony's Hospital, Denver; President of Denver Clinical and Pathological Society, (1905-06); Editor of Denver "Medical Times." Second Thoroughly Revised, rewritten and considerably enlarged edition. With 100 illustrations in the text and 14 full-page half-tone and colored plates. Philadelphia, F. A. Davis Company, 1914-16 Cherry Street, publishers, 1911.

The author is a widely recognized teacher and exceptionally reliable laboratory expert. He also possesses a remarkable faculty, as to what to include and what to exclude in a text-book for students. His aim in presenting this text-book has been to offer a reliable guide to the student before, (and to the doctor) after graduation. A careful reading of this work will demonstrate that it presents a clear exposition of chemical knowledge and is a reliable reference book for the practitioner in applying chemical facts and methods in his daily work. The author presents facts in a clear, simple manner and utilizes topic generalization as much as practicable. This new edition takes full note of and presents to the student the latest facts and teachings of recognized value. This work will be found of equal value as a guide for under-graduates. Immediately following each chapter are a series of questions, especially appropriate for students for reviewing purposes.

Illustrating the comprehensiveness of treatment and the way in which the author has adapted the book to the needs of the student of medicine, it is plain to be seen when you glance at the following chapters: "Medical Physics," "Chemic Philosophy," "Inorganic Chemistry," "The Carbon Compounds," "Analysis " "Incompatibility," "Sanitary Chemistry," "Toxicology," "Physiologic and Pathologic Chemistry," and "Clinic Chemistry." A careful survey of the chapters of this work clearly reveal that all of the departments of chemical science have been dealt with in the limits of this volume without serious omission. Students of medicine and allied sciences will find this book a safe and practical guide and one upon which they can rely for helpful instructions.

Hand-Book of Diseases of the Eye. A text-book for students and practitioners, by Harry Caldwell Parker, M. D., Clinical Professor of Ophthalmology, Indiana University School of Medicine, Indianapolis, Ind.; formerly Resident Ophthalmic Surgeon, Massachusetts Charitable Eye and Ear Infirmary; Clinical Assistant same; Ophthalmic Surgeon to St. Elizabeth's Hospital; Instructor in Ophthalmology, Tufts College Medical School, Boston, Mass. Illustrated with 115 text engravings a half-tone frontispiece and five full-page chromolithographic plates, with 26 figures. Philadelphia, Price, $2.00. F. A. Davis Company, 1910, 1914-16 Cherry St.

The author's aim in the preparation of this little volume has been to place before the student and busy practitioner in a concise manner the results of recent investigations in diseases of the eye. He omits unnecessary details, but all the common diseases of the eye and their treatment are sufficiently elaborated. A special chapter on Bacteriology is incorporated and one on Refraction gives details of modern methods necessary for preliminary work in this subject. The chapter on sclera gives the latest investigations on the tuberculous origin of most forms of inflammation which attack this structure. He also refers to the application of Calmette's ophthalmo-tuberculin reaction and to the Von Pirquet's cutaneous tests as diagnostic points in tuberculous cases.

The work closes with a formulary containing more than 40 practical prescriptions, which will be found of much value to the practitioner. This book is not designed for the specialist, but is indicated as a guide to the student and general practitioner who will find therein a reliable guide in many hard places.

Refraction and Motility of the Eye. With chapters on color blindness and the field of vision. Designed for students and practitioners, by Ellice M. Alger, M. D., Adjunct professor of Ophthalmology at the New York Post-Graduate Medical School. Ophthalmologist to the New York Dispensary, etc. With 122 illustrations. Philadelphia, F. A. Davis Company, 1914-16 Cherry Street, publishers, 1910.

In this little volume the author presents a difficult subject in a specially clear and essentially arranged manner, so that it can be readily understood in the most practical way by the general practitioner. Many phases of the subject heretofore obscure and difficult to grasp have been admirably elucidated in the text and by illustrations, thus rendering the work of special value in every day use. The general practitioner, more than ever before is being compelled to investigate the subject of refraction that he may meet the requirements of his own patients intelligently, even if he has no time or desire to enter the special field himself, he must have an intelligent conception of the possible role of the eye in given cases.

A careful study of this little volume will enable the physician to understand his duty and to whom to refer his patients for refraction. We are pleased to commend this volume to our readers.

Makers of Man. A Study of Human Initiative, by Charles J. Whitby, M. D., (Cantab). Author of "The Logic of Human Character," "The Wisdom of Plotinus," etc., etc. With 47 half-tone and other plates. Price, $3.00. New York, Rebman Company, 1123 Broadway.

Dr. Whitby has chosen for subjects in this work the lives of 40 world famous individuals. He makes no concessions to those whose ideal of a scientific or philosophical treatise would seem to be written in words in more than two syllables. He makes no sort of demand on the culture or intelligence of its readers. From the author's standpoint the great man, has, properly speaking no private life, all his thoughts, words and actions are, in their degree, factors of his power and influence and, as such, worthy of respectful study. According to his reasoning, Psychology is the Jacob's ladder by which the modern mind hopes to reach the heaven of Philosophy. In a work like this, reviewing the lives of great men, the author has found it impossible to give equal attention to each. On the other hand, without a sufficient number of examples, no general conclusions could have been attained. In this work will be found a short sketch of the lives of some great men, among whom are found Cromwell, Frederick the Great, Lord Nelson, Napoleon, Abraham Lincoln, Mozart, Goethe, Sir Walter Scott, William the Silent, Bacon, Harvey, Christ, St. Paul, Marcus Aurelius, Mahomet, Martin Luther, Emerson, and others. The author has aimed at the exclusion of this work from second rate personalities. He has found it desirable to make no mention of Shakespeare and he even has doubts as to the propriety of placing Sir Walter Scott in the high company of great men, making apology for not having placed Byron in his pantheon. This work is altogether a very readable volume and one which those interested will be well repaid by reading.

On Acute Intestinal Toxemia in Infants. An experimental investigation of the etiology and pathology of epidemic or summer diarrhea, by Ralph Vincent, M. D., Member of the Royal College of Physicians, Senior Physician and Director of the Research Laboratory, The Infant's Hospital, London. An address delivered before the Glasgow Obstetrical and Gynecological Society, on November 23, 1910. Demy 8vo. 83 pages, with 17 illustratuions on 8 plates, price 3-6 net. London, Bailliere, Tindall and Cox, 8, Henreitta Street, Covent Garden 1911.

For a period of several years past Dr. Vincent has made a special study of Acute Intestinal Toxemia in infants and small children, officially termed, *epidemic diarrhea*, and this little volume contains his best thought on the subject. Every pediatrist who is interested in this subject should have this work in his library. Dr. Vincent has gone into the subject at great length, reporting many clinical cases and the investigations made in his research laboratory. Altogether it is a very readable and instructive brochure and one which gives us much pleasure to recommend.

PEDIATRICS

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EDITORIAL

THE ACUTE DYSPEPSIA OF INFANCY.

Acute indigestion during the first few months of life is an affection, which, as a rule, fails to receive the full need of attention for which it calls. Its symptoms are regarded as of little or no importance; it is suggested that the child's food "is not agreeing with it," and the mother is reminded that in infants, trifling derangements often induce alarming manifestations. This reassuring attitude, however, is often productive of grave harm to the invalid and there can be no doubt that the mortality from gastro-enteritis would largely diminish if more attention were paid to the first signs of abnormality in the performance of the digestive functions. Of these signs a change in the color of the motions usually appears at the onset; the green color appears to be due simply to biliverdin, as the bacteria described by Lesage as causing it, have eluded other observers. At the same time there is no doubt excessive microbic action, for the normal acidity of the feces is lost and they may become quite strongly alkaline. Post-mortem the green color is rarely seen as high up as the duodenum, and Heubner concludes that the affection begins as a chemical derangement of the contents of the jejunum and upper part of the ileum, a view which is supported by the fact that gastric symptoms do not appear till comparatively late in the disease. The next symptom, is, in fact an increase in the number and a diminution in the size of the green stools, and the presence of volatile fatty acids, which render them at the same time extremely putrid or malodorous and most irritating to the skin. Peristalsis becomes more active and is both irregular and painful, the child, hence, becomes restless and wakeful. The stomach is next affected, vomiting supervening with loss of appetite and often of weight, which in any case remains at best stationary. Then the stools become watery, the temperature rises, and unless remedial measures have been adopted, gastro-enteritis supervenes.

The radical treatment of this affection is rendered difficult by the fact that it commences in the most inaccessible part of the alimentary tract, namely, the small intestine. The first necessity as Heubner well says, is to wash out the stomach, a procedure which, although it has been extensively employed abroad in the treatment of infantile dyspepsia since Epstein introduced it several years ago, seems to have found but scant favor. It is easily done by means of a soft catheter, the child laying on its left side, on the nurse's knee, facing the operator and having the hips raised three or four inches above the level of the head. One or two ounces of 0.02 per cent. solution of resorcin or 0.5 per cent. solution of boracic acid are poured in through the funnel the quantity varying with the size of the patient. The funnel is then depressed and washing continued till the fluid comes away clear; the sitting is concluded by the introduction of one-half of one drachm of castor oil through the tube. Should lavage be deemed unnecessary or inadvisable, Heubner recommends the administration of a powder containing one-half to two-thirds grain calomel and 15 grains magnesium carbonate every three hours until the characteristic greenish-gray stools begin to appear; one dose usually suffices; more than two or three are never required. The alimentary canal having thus been cleared out the next step is to regulate the diet, by striking out the food which is suspected to have been the cause of the symptoms. It is best, if possible, to rely entirely upon sterilized milk, but if this was the diet before the attack some farinaceous food will now be indicated. Any of the better class of infants' foods may be given, but not boiled with the milk, which forms a mixture difficult of digestion. Heubner's plan is to take a tea to a tablespoonful of the food and to shake it up with cold water, subsequently boiling with a pint of water for a quarter of an hour. In very bad cases rice meal or arrowroot should be substituted for the prepared food, a tablespoonful or so of milk sugar being also added. Whatever form of nourishment is given should be carefully sterilized, to prevent the growth of the milk bacteria in it. This diet produces brown, rather solid, dejections; after it has been continued for three days one may assume that the intestinal bacteria have been starved out and that the time has come for cautiously recommencing with sterilized milk, which should be done by gradually stirring an increasing quantity into the gruel. Intestinal antiseptics are rarely of use, though Soltmann recommends resocin and Widowitz speaks very highly of naphthalene; if necessary, however, the acidity of the motions should be restored by the use of very dilute lactic acid (Lesage).

Acute dyspepsia is more difficult of treatment when it occurs in breast babies under the age of three months, before which time farinaceous food is badly borne, either leaving the intestine unchanged or increasing the dyspepsia. A gruel made of ground arrowroot, maize or rice is, perhaps, less intolerable than other foods, but in many cases one is reduced to feeding the infant, for a day at least on thin veal broth or egg water (the white of one egg with some milk sugar to two pints of boiled water). If this diet is properly assimilated it may be continued for a couple of days, the child then being put upon a mixture of a pint of cow's milk with two pints of five per cent. solution of milk sugar. In some instances peptonized or albumose milk may be given with advantage. Such is the treatment of a condition which, though of obscure origin, presents itself as a definite clinical entity, and although increasing knowledge may improve our insight into its pathology, it is hardly likely to subvert the rational basis of remedial measures based on experiences and common sense.

ANTI-VIVISECTIONISTS AND PSYCHOLOGICAL RESEARCH.

Nowadays when introspective and experimental psychologists are alert to discover new fields for exploration we would respectfully call their attention to the brilliant prospect offered by the anti-vivisectionist. When psychologists have exhausted the possibilities of inquiries into the religious instinct and the like, when they have wearied of reaction times and psychical measurements, they can be assured of our intelligent appreciation if they will attempt to analyze the impulses that prompt men and women, apparently of gentle breeding, to attack with pen and pencil honest, earnest men, who devote their lives, their time, their energies, their moneys to the advancement of science that humanity may reap the reward.

That those who take it upon themselves to vilify the characters and the humane instincts of such men are abnormal and so belong properly to the psychiatrist may be urged by the psychologist as the motive of disinclination on his part for not assuming the task. Nevertheless we urge the latter to grapple with the rabid anti-vivisectionist and contribute to the enlightenment of the world, for their attitude surpasses understanding.

If the editors of one of our most esteemed and valued secular weeklies were so unfortunate, the one or the other to develop an intestinal intussusception which went on to destruction of a segment of the organ, and if the surgeon, who has recently been pilloried in their periodical were summoned to attend him should say, "I am able to save your life by utilizing the knowledge that I have gained from performing intestinal anastomosis on the dog—or on fifty dogs; will you avail yourself of skill thus bought?" We wonder if he, standing close to the Ivory Gates, would consent to pass through for fear that the ghost of the dog, previously offered up on the altar of science, might disturb his peace of mind forever after?

We count it as particularly unfortunate that there is an inherent instinct or congenital psycho-motor impulse in the canine family to lick the hand that has wielded the rod, for if some dreamer or maker of verses had not intoxicated the anti-vivisectionist with the idea that a dog always licks the hand of him who is prepared to, or has just operated on it, the latter would really have nothing to wax indignant or wrathy about. But the nature of the beast cannot be changed, inherited characteristics must be endured, but the acquired ones of the anti-vivisectionist can, and ought to be cured.

If animals are sacrificed to maintain life by furnishing food stuff, why should they not be sacrificed to furnish brain stuff, knowledge? The health of vegetarians, the world over, is evident that animal flesh is quite unnecessary as an article of diet. One of the most ardent advocates of this form of dietary recently died in England, forfeiting the possession of more than four score years. Besides making the world his debtor for a system of phonography known as far as the confines of civilization, he had a letter in "fonetic" orthography which has contributed to the gaiety of nations while it extolled the virtues of vegetable diet.

We would be grateful for the relief if comical weeklies and serious monthlies would transfer their reformatory for a time from the vivisectionist to the carnivorous biped.

THE CONTAGIOUSNESS OF INFANTILE PARALYSIS.

Our Agust issue for 1910 contained more than 130 pages of text devoted entirely to and covering every phase of the subject of Poliomyelitis. This disease is of such great importance to the profession that we have, from time to time, published papers on this subject since the appearance of the August number and in this issue we present two contributions to the subject, to which we desire to call attention.

A year ago we advocated quarantine for cases of poliomyelitis. The contagiousness of this disease has been demonstrated beyond question. Flexner and Lewis have produced the disease in monkeys by the introduction of the virus intracerabrally into the peritoneal cavity, into the circulation, subcutaneously, into the spinal canal, into large nerves and through certain mucous surfaces.

The virus certainly passes from the body through the nasopharyngeal mucous membrane. This has been proven by the fact that emulsions of the nasopharyngeal mucous membranes of monkeys inoculated intracerebrally with the virus produce the disease in other monkeys. It is only necessary to study the history of recent epidemics to be assured, beyond doubt, that the disease is contagious. Further evidence in this connection is the fact that strict quarantine will limit the spread of this disease.

John Lovett Morse, of Boston, in writing on the subject of the contagiousness of this disease quotes Emerson's figures in his study of the Colrain epidemic of 69 cases. "Only two of the patients in this epidemic were isolated during their illness. There were 166 children in the families in which the other 67 cases occurred, only four of which developed the disease. There were four instances in which the sick child slept with a brother or sister up to the time of the illness, seven during the first few days of the illness and five throughout the entire illness. There were nine instances in which the other children of the family drank from the same cup, and 12 in which the children in the family and the neighbor's children kissed the sick child during the acute stage. Out of the entire number involved in the intimate contact just described, but two developed the disease. Eighty-six other children among neighbors and friends were also in intimate contact with the 67 patients. By intimate contact is meant as free intercourse between the well and sick as the patient's condition would permit. Further evidence that the disease is not very contagious is the fact that it seldom, if ever, develops in hospitals in which the disease is being treated. No case has ever developed in the wards of the Boston Children's Hospital, although patients with the disease have been treated there for many years. There was a single case in St. Mary's Infant Asylum in the summer of 1909. In spite of the fact that the contact with the other babies and children was very close, no other cases developed."

The New York Board of Health has recently decided that poliomyelitis is a contagious disease and have placed it on the quarantine list in the same class with scarlet fever and diphtheria. The only question is how long this quarantine should be maintained. So far, we have no definite data on this point. It may be that three days is long enough or it may be that three months is necessary. The question as to whether other children in the family should be allowed to mix with their playmates and attend school and whether or not members of the family should be quarantined are matters yet to be decided.

Dr. Flexner states that peroxide of hydrogen destroys the organisms and since the organism is undoubtedly present in the naso-pharynx in most, if not all cases it would seem that the administration of peroxide of hydrogen by means of a spray to the naso-pharynx would be the proper prophylactic procedure. It must not be overlooked, however, that peroxide of hydrogen is an irritant to the naso-pharyngeal mucous membranes of many people, and in such people it might further increase the danger of infection to them.

A FEW THOUGHTS ON MEASLES.

Elsewhere in this issue we are publishing an article entitled "Diagnosis of Measles," by Edmund Cautley, M. D., Cantab., F. R. C. P., London. This eminent English authority writes an instructive paper on the differential diagnosis of measles, which is well worth careful study. The name of this malady carries one's memory back to the days of one's childhood and most of the older practitioners in the rural districts can vividly recall the time when the family remedy was a decoction or "tea" made from boiling a handfull of fecal excrement from "Mary's little lamb." This was taken while warm, without dilution or flavor. The editor can recall the time when the old colored mammy of the Southland, on finding that her little Sambo had measles would at once shamble off to the sheep pasture for the wherewithal to make the "tea" to cure her little hopeful of the measles.

There are a few complaints, as measles, whooping-cough and scarlatina, commonly termed the catching maladies, which are looked upon as a necessary adjunct to childhood, and which for a person not to have contracted in his youth, seems somewhat of a reproach. Such an individual is lacking in the ordinary early experiences of his species. Measles is generally regarded as a trifling complaint to which little or no danger is attached. The usual definition of the disorder in a medical text-book is much as follows: "Measles is an acute specific fever of short duration, characterized by catarrhal symptoms and a red rash, the latter appearing on the fourth day. It is a disease of childhood, and rarely occurs more than once in the same subject. If the patient be well nurtured and kept under good conditions it usually ends in a speedy and complete recovery." This description may be applied with truth to a mild attack, and where the facilities for good nursing and care are available but what of an epidemic in the overcrowded poor districts, of a large town where such conditions are wholly wanting? The fact appears to be too often overlooked that measles is in a high degree infectious at every stage. Consequently, when an outbreak occurs in a school, hospital or in any place where children are massed together, the infection will spread like wildfire. Scarcely any of the infectious diseases are liable to so many severe and fatal complications. Nevertheless measles is still looked upon as comparatively harmless, requiring little or no treatment. This belief is assuredly not warranted when the disease gains a foothold in the poverty stricken parts of a large city. It would appear that the time has come when more attention should be paid to the prevention and treatment of these so-called simple diseases of childhood, particularly when the fact is considered that measles and whooping-cough are responsible for much of the present infantile mortality.

PEDIATRICS

ORIGINAL ARTICLES

THE DIAGNOSIS OF MEASLES.

BY

EDMUND CAUTLEY, M. D., Cantab., F. R. C. P., Lond.

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Like other infectious fevers measles may be quite easy or extremely difficult of diagnosis. The attitude of the relatives of the patient is sometimes very trying as well as illogical. It can be best illustrated by a simple incident. A friend of mine in general practice was called in to see a girl with a rash and sore throat. Not being quite certain that the case was one of German measles he obtained the advice of one of the most eminent skin specialists of the day, who also would only commit himself to the opinion that the suggested diagnosis was probably correct. On the same evening a note arrived from the father to say that, as my friend could not diagnose such a simple complaint as German measles, he had decided to put his daughter under the care of another doctor.

Such a contretemp might just as easily arise in cases of measles. In order to minimize the chance of its occurrence it is essential to have clear ideas of the main points on which to base a diagnosis and to state definitely to the relatives, if the available evidence is inconclusive, what is the probable diagnosis, but that it is absolutely impossible to be certain until the disease has further developed. It is in these doubtful cases that the opinion of a consultant is so valuable; not merely because he may be better able to estimate the relative value of symptoms, but because he can and ought to take the responsibility of making a more or less certain diagnosis, although he may guard himself by saying that the evidence is insufficient for absolute certainty and that only the course of the disease will verify or disprove the accuracy of his opinion.

It is in the early stages of measles that these difficulties are most commonly met with and it is quite impossible invariably to avoid mistakes, if positive opinions are confidently expressed. In a recent case, for instance, the attack was ushered in with chilliness and fever, the temperature of the patient being 101 degrees F. in the evening. Next night, when seen in consultation, he had a pulse rate of 84 per minute and temperature 103 degrees F. Nothing abnormal could be found to account for the illness except tonsillitis, chiefly on the right side. There was no coryza, cough, conjunctivitis or other sign of catarrh. The temperature fell about a degree on the third day and rose on the evening of the fourth day to 104 degrees F. A papular rash began to come out on the face and the mouth exhibited many buccal spots, as well as a general stomatitis. There was a little pulmonary catarrh. From the onset sweating had been profuse and the pulse rate, in spite of the high temperature had kept at about 84 per minute. The diagnosis seemed absolutely certain. On the following morning, although the temperature was a degree higher, the rash had practically disappeared and the mouth was much better. The pulmonary catarrh was worse, and the doctor in charge of the patient was inclined to take the view that the diagnosis of measles was erroneous and that some acute lung disease was developing. Next day the rash reappeared, extended rapidly, and was typical in character. In such a case a positive diagnosis on the second day was impossible. It was hoped that the throat inflammation might account for the illness but the possibility of measles was suggested and even variola was taken into consideration, although the onset was comparatively mild and there was neither vomiting not pain in the back.

Many factors must be taken into consideration before arriving at a diagnosis in the early stages of the illness. The *prevalence of the disease in epidemic form*, as in London at present, should always lead to the possibility of its occurrence being borne in mind. Many a disease is overlooked because the possibility of its presence is ignored or forgotten.

History of a Previous Attack.—If the patient has previously had an attack, the probability of true measles is small. No definite instance of two attacks in the same patient has come under my observation. I have seen many patients in whom a previous attack is said to have occurred and I am always somewhat skeptical as to the accuracy of the diagnosis in the former illness. The differentiation of measles from rotheln is extremely difficult, and other eruptions may also lead to mistakes in diagnosis. A few days ago I saw a girl with follicular tonsillitis and a profuse measliform eruption. So extensive was the rash that her medical attendant thought the association with sore throat might mean a double infection with scarlet fever and rotheln. Had a diagnosis been based on the character of the rash alone it would have been called true measles. Even the appearance of the rash within 24 hours of the onset might have been explained by the assumption that the invasion was particularly mild and was followed by a prodromal remission of fever. This girl had had definite measles two years ago, and there were additional signs of rotheln in the considerable enlargement of the posterior sternomastoid and occipital glands. Though I have never seen two attacks of measles in the same child, they are said to occur. Second attacks are generally mild, perhaps limited to buccal spots or a fleeting eruption; and the accuracy of the diagnosis may be only confirmed by the infection of other children. Obviously the difficulties in the way of diagnosis of such cases are very great.

The next point to inquire into is that of *exposure to infection*, for the incubation period is commonly nine to twelve days. A wider limit of eight to fourteen days is perhaps safer. Balme even gives the limits as six to eighteen days. Two signs must be mentioned as occurring during the incubation period. *Meunier's sign* is a notable loss of weight, beginning on the third to the sixth day. It might prove valuable in school epidemic by enabling the suspected cases to be isolated before the onset of the disease. The second sign is less valuable because parents are not anxious to have it investigated in their children. I refer to the *polynuclear leucocytosis* which reaches its maximum about the sixth day before the eruption. It falls during the development of the rash to such an extent that it is replaced by actual leucopenia.

The *typical onset* is marked by fever, malaise, cough and catarrh of nose, pharynx, larynx and conjunctiva.

The course of *the fever* is varied. It may rise abruptly at the onset, even up to 104 degrees F., fall to normal next day and remain normal for one to three days. It then rises gradually to a maximum with the full development of the rash, perhaps staying high for two to three days, and then falls rapidly by crisis. This intervening period of apyrexia is the chief characteristic of the temperature chart of measles. It is by no means always present. Sometimes the fall is only one or two degrees in extent. It is such a characteristic feature that in the case of a child with cough and fever, with or without nasal catarrh, the secondary rise is very strong evidence of measles. These remissions last for 12 hours to as much as four days. Sometimes there are more than one such remission, of short duration, and the rash is delayed. One of two sisters began with slight faucial catarrh and temperature of 104 degrees F. Next morning the temperature was normal, but it began to rise again in the evening and went on rising steadily until the appearance of the rash on the sixth to the seventh day. Buccal spots were present on the fifth day. With similar course in the other sister the initial temperature was only 101 degrees F. The stage of apyrexia was practically of the same duration and the secondary rise of temperature as high. The rash came out on a similar date and buccal spots appeared a day earlier, on the fourth day. In other cases the fever increased progressively from the onset up to the appearance of the rash. Sometimes the disease, notably in breast fed babies, runs an afebrile course and is very mild in character.

The degree of *malaise* before the eruption is extremely variable and appears to depend on the height of the temperature. During the period of apyrexia, when present, the child may seem quite well except for a little cough and nasal catarrh. Even these signs may be absent.

Cough is sometimes the most marked initial symptom. It is short, dry, even paroxysmal, and may be barking in character. Examination of the throat reveals general redness of the fauces, which one may be inclined to regard as the result rather than the cause of the cough. At times it is laryngeal in origin. Later on it may depend partly on the throat condition, and partly on laryngeal or on bronchial catarrh.

Nasal Catarrh is the most common early sign, but it may not develop until the fourth day and may even be absent throughout. The discharge is serous and may become purulent. Epistaxis occurs in malignant and sometimes in severe cases.

Early Laryngitis is a valuable sign. It is usually slight and disappears as the rash comes out. The voice is hoarse, the cough hoarse and croupy. It may be so acute as to necessitate tracheotomy and is liable to be mistaken for diphtheria.

Conjunctival Catarrh is much more common. It begins and is most marked over the bulbar conjunctiva at the usual site of a phlyctenule. This early distribution and limitation may enable one to distinguish it from simple conjunctivitis. It may be quite as characteristic in rotheln as in measles.

Examination of *the mouth* affords most valuable evidence of the onset. The palate often shows blotchy discoloration in the shape of dark red or purplish, triangular or oval patches, best seen on the hard palate. They generally appear a day before the rash and are known as the "*morbillary exanthem.*" An "*erythemato-pultaceous stomatitis*" (Comby) may precede by two days or may accompany the rash. The oral mucosa is swollen, red and dusky, at times violet. A thin, detachable, whitish coating forms on the gums. The palate and fauces are injected. Even more importance can be attached to "*buccal spots*" described by Flint in 1884, by Filatow in 1895, and by Koplik in 1896. They are almost always present, in variable numbers, one to three days before the eruption. Usually they come out on the first or second day; if later, the rash is often delayed. They are most common on the buccal mucosa opposite the lower molar teeth; and may be found on the labial mucosa, palate, uvula, fauces, gums and under the tongue. They are best seen in good daylight and may be overlooked in artificial light. At first they appear as irregular or round, rose colored spots with a central bluish white speck. The rose spots may become confluent. The specks rarely coalesce; they are raised and firmly adherent, somewhat resembling miliary tubercles as seen on the meninges. The reddened base or areola is not always present. The central speck is the pathognomonic feature and is formed by the puffy apex of a papilla. The number bears no relation to the severity of the attack or extent of the rash, though the spots are apt to be most marked and most numerous in severe cases. They must be carefully distinguished from thrush and aphthous stomatitis, by the absence of the red areola in these affections, in which also the spots are larger, whiter, irregular in shape and more coalescent. Tiny particles of milk or food, mucus and the orifices of buccal glands may cause confusion.

Prodromal Rashes are not uncommon on the first or second day. They rarely come out after the onset of the catarrh, but often before the buccal spots. The usual type is a general or patchy, punctate erythema on the trunk. Sometimes it consists of discrete papules, blotches and patches of confluent papules; of isolated papules or macules; of urticaria or ill-defined erythematous mottling; and may be polymorphic. It either disappeares or merges into the true rash.

The Rash comes out on the fourth day, or on the second or ninth day. A short incubation period generally means a long invasion and *vice versa*; the result being that the rash commonly appears on the fourteenth day after exposure to infection. It comes out first on the forehead, at the margin of the scalp, and behind the ears; occasionally on the buttocks and round the anus. I have never known rotheln start in the latter situation. It may simulate the rash of rotheln, serim disease or various skin eruptions; and may coincide with other specific rashes.

A further diagnostic point is the presence of the *diazo-reaction* in the urine; said never to be present in rotheln.

Thus, there are very many factors of assistance in arriving at an accurate diagnosis. Early cases are mistaken for acute coryza, influenza and faucial catarrh. In doubtful cases most stress must be laid on the temperature, especially on a prodromal remission, the state of the oral mucosa, buccal spots, nasal catarrh, troublesome cough, conjunctivitis and early laryngitis. Yet in spite of all the various factors enumerated, cases are met with in which the diagnosis remains a matter of uncertainty, until cleared up by the course of the illness or the infection of other children. I have known a case diagnosed in its early stages as varicella, rotheln and measles by three successive consultants; and yet when I saw it later the illness was undoubtedly one of septic rash due to sore throat. When the heads of the profession are liable to error it is not surprising that those of more limited experience find the difficulties very great. The milder the case, the more difficult is the diagnosis as a general rule. Only by carefully examining the patient and weighing all the available evidence, not jumping to rash conclusions, can the possibility of erroneous diagnosis be minimized.

20 Park Street, London, W.

THE TREATMENT OF POLIOMYELITIS WITH ESPECIAL REFERENCE TO PREVENTION OF DEFORMITY.*

BY

BEVERLEY R. TUCKER, M. D.

Richmond, Va.

Since recent investigations have proved beyond a doubt that poliomyelitis is an infectious disease, that its probable route of entrance is through the nares, that it occurs in widespread epidemics which frequently follow lines of travel, that the disease is often accompanied by more or less severe meningitis, that it is seasonal in its occurrence, that its pathology is not limited to the anterior horn cells alone and that its onset does not follow the typical text-book picture of paralysis following a few days or a few hours of gastro-intestinal disturbance. the treatment has necessarily changed.

Since the particular micro-organism causing the disease has not been isolated and the mediums through which contagion is conveyed are not yet discovered, since the prodromal symptoms are not always typical and since there is great disparagement among authorities as to the value of electricity, exercises and drugs the question of treatment, with our present knowledge, cannot be positively settled.

The prognosis in the past may be said to have varied with the virulence of the different epidemics. Speaking generally, from five to fifteen per cent. usually die in the initial stage and in from five to fifteen per cent. complete recovery has taken place. The residual deformities have varied chiefly according to the treatment instituted during the first few months of paralysis and it is to the prevention, as far as possible, of these deformities that we wish to direct especial attention. We shall endeavor, however, to also bring out a few points in the treatment of this distressing disease from other aspects.

First, as regards prophalaxis, although only in a comparatively few instances have several cases occurred in the same house at the same time, we should observe a strict quarantine until the acute symptoms subside. As its epidemicity in localities is probably due to children becoming infected through the same source, whether water, air or food we know not, we should advise against healthy children going to these localities during an epidemic. As it has been pointed out by the New York Investigating Committee on Poliomyelitis that its spread is mainly along routes of travel, children during the acute stage should not be allowed on public conveyances, nor should healthy children travel in these conveyances in the localities of epidemics unless the coaches have been thoroughly disinfected. Since it has been thought by Flexner and others that the most usual route of entrance of the organism of poliomyelitis into the system is through the nares, it is well that care should be taken in the disinfection with antiseptic solutions of the upper air passages of children when an epidemic is present. Poliomyelitis should be made a reportable disease by all health departments and every case should be studied with a view to the discovery if possible of its source of infection and its mode of transmission. As it has been

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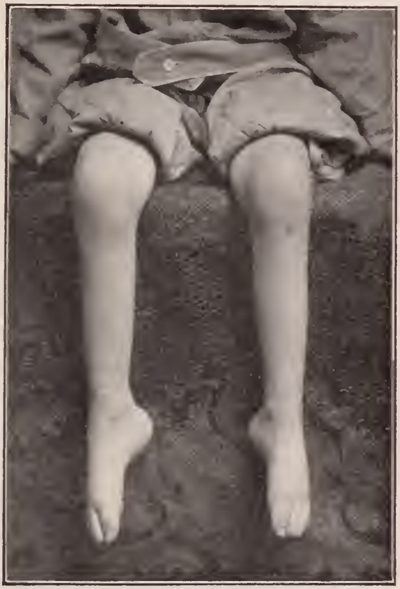
*Read before the Tri-State Medical Association, February 22, 1911, at Raleigh, N. C.



1. Author's photograph showing the unsupported legs of a case with knee abduction and double foot-drop.

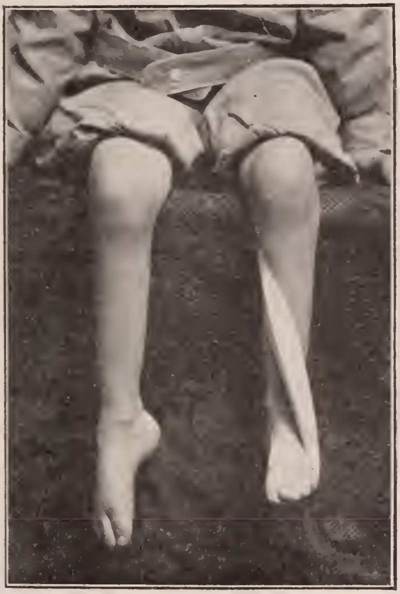
observed that an attack of poliomyelitis frequently follows some ordinary disease such as tonsillitis, bronchitis, rheumatism, malaria or gastro-intestinal disturbances it is important to bear the disease in mind, test daily for any paralysis that may exist, keep the air passages as clean as possible and if there is any poliomyelitis in the locality at the time to keep the children away from the patient.

Such prodromal symptoms as sweating, restlessness, slight rise of temperature, gastro-intestinal disturbance, hyperesthesia, slight rigidity of the neck and slight weakness of one or more of the extremities while not always pathognomonic should make us think of poliomyelitis and it is probable that some cases may be aborted in this very early stage by the use of a quick purge, nasal and mouth toilet and the administration of salol or hexamethylenamine.

The disease proper may be divided for treatment into three stages, *the acute or febrile stage* lasting a few days to a few weeks and ending when fever and other constitutional symptoms subside; *the stage of acute paralysis* in which more or less rapid improvement usually takes place and which lasts from a few months to a year and lastly the *stage of residual paralysis and deformity* in which the treatment is mainly mechanical and surgical.

During the acute stage the extremities should be tested daily for paralysis and we should remember that more or less meningitis is frequently present. When a case is first seen calomel or castcr oil should be administered, the bowels kept open afterwards and if the temperature is high it should be reduced by cool water or alcohol sponges rather than antipyretics. For the restlessness hot baths are usually most effective or small doses of bromide may be required. Hot baths and rubbing will usually control the pain and hyperesthesia. The child should be put on a liquid diet and kept closely in bed. If meningitis is present a lumbar puncture should be performed and any excess of cerebro-spinal fluid withdrawn. This often causes immediate and marked improvement. The only drug seeming to have direct beneficial effect is hexamethylenamine which I have been in the habit of giving from one to three grains four times a day according to the age of the child. This drug forms formaldehyde in all of the body fluids including the cerebro-spinal fluid and probably affects the organism of poliomyelitis.

During the second stage, or that of early paralysis, after the constitutional symptoms have subsided, treatment should be very active. It is of the treatment in this stage with a view to preventing residual deformities and to the improvement of the paralysis which I wish to direct especial attention. The child should be sustained by most nourishing food and cocoa butter rubs aid materially in the nourishment. Massage by a skilled masseur should be given once or twice daily in conjunction with Swedish movements to keep the muscles and joints in the best possible condition. It has been found that warm tub baths with the child's head supported above the water aid materially in the movement of the partially paralyzed limbs, the buoyancy of the water enabling the child to move the limbs much more easily. Toys should be given the child to play with and it should be allowed to crawl and perform natural movements. These children, however, often get into pernicious habits of locomotion; for instance, one patient would sit on the hip of the paralyzed side and without attempting to move this extremity would push itself along with its hands and its good foot. Whether the child is moving, standing, sitting or lying down, improper

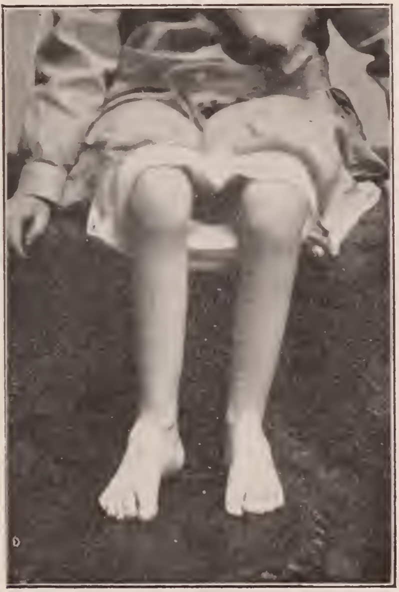


2. Author's photograph of same case as 1, illustrating prevention of foot-drop of the left foot by use of an adhesive strap.

positions should be noted and an effort made to correct them. Casts should never be used with these children. The limbs are cold and should be kept warm by the wearing of flannels and by rubbing. Strychnine is valuable in aiding the child to regain its strength and if the child is anemic or poorly nourished iron and cod liver oil are indicated. It is important that the child is not allowed to attempt walking too soon or to fatigue its affected extremities.

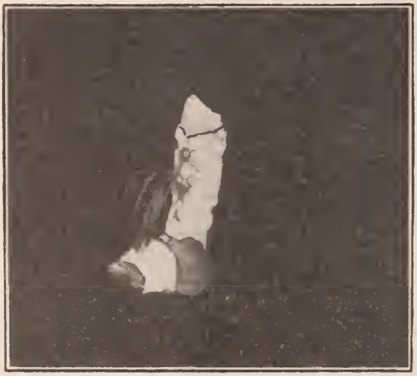
One of the early and usually more or less preventable deformities is foot drop. Care should be exercised in seeing that the anterior tibials are especially massaged, that when the child is in bed the covers do not press the toes down and that the child's foot is kept in a right angled position to the leg; this may be accomplished by the use of adhesive put under the sole and brought up on the outside of the foot and adhered to the inner side of the leg after the manner of the illustration. The adhesive should be removed at least twice in every twenty-four hours for baths and massage. Light weight splints made of paper and which may be molded are useful especially for night wear to prevent the foot from dropping and also to keep it from twisting outward or inward. A sand bag at the bottom of the feet when the child is in bed is of assistance. When the child is in the sitting posture its legs should not be allowed to dangle and the foot should rest upon a stool or other support and if the knees have a tendency to abduct, a loose cloth may be tied around them to prevent this. (See illustration). There is a great tendency for the leg to rotate outward at the hip, but this may be prevented by tying the knees loosely together so as to prevent the extreme abduction these children often assume while lying down. One frequently sees a child with the soles of its feet together and the knees in extreme abduction resting on the bed, the opening between its legs being diamond shaped. These abductions may also be overcome by a long narrow sand bag placed on the outer side of the leg and thigh.

During this stage when the upper extremity is affected it may be necessary to support the arm at the elbow. This is best done by a loose cloth thrown around the opposite shoulder in the manner of a sling. The arm hangs flail and its deformities although less marked are harder to prevent than those of the lower extremities. These and other deformities are due largely to relaxation of the ligaments of the joints and the weight of the pending limb; for instance, a paralyzed leg from its weight relaxes the hip joint and in the sitting posture, if not supported, the weight of the leg and foot causes relaxation at the knee and the weight of the foot causes relaxation at the ankle. Much of this may be overcome by skilled massage but in nearly every instance some device is necessary to prevent deformity. When one lower limb is paralyzed there is a tendency for the pelvis to tilt, being higher on the good side and lower on the affected side than normal. This is corrected by the use of a cane, a crutch or a brace. The writer feels sure that with careful attention to these points many future orthopedic operations and much ungainliness may be prevented.



3. Author's photograph, same case as 1 and 2, illustrating prevention of foot-drop by allowing the feet to rest upon a stool and preventing abduction by a towel around the knees.

The question of the use of electricity has caused much discussion, some neurologists holding that it should be given during the first few weeks of the disease, others that we should wait five or six weeks and still others that the employment of electricity is of no value. Again some prefer the galvanic current, others the faradic, others the static and still others think that although electricity should be employed it makes but little difference which current is used. Personally I prefer to wait four or five weeks after the constitutional symptoms have subsided to give electricity and believe that galvanism daily with the negative pole at an indifferent point as the nape of the neck for the arms and the sacrum for the legs, and the positive pole moved over the paralyzed limb from five to seven minutes gives the best results. If galvanic response is present interruptions may be given at each treatment. The strength used should be from ten to twenty milliamperes and we should never give a current strong enough to cause pain. After several months of daily use we may continue the electricity for a year every other day and during all this time massage should be continued by a skilled masseur if it can be afforded and if not some member of the family should be instructed how to give it.



4. Author's method of lacing canvas up the leg and another piece laced down the foot and the two ends of the lacing tied together.

The third stage or that of residual paralysis we shall now only very briefly consider. If possible massage should be continued off and on for several years. The question of the wearing of braces should be considered when the lower extremities are affected and it is important that these braces should be made by a reliable house under the direction of a good orthopedic surgeon. Deformities have to be corrected by orthopedic operations often including tendon and nerve transplantations. Re-educational exercises and exercises of percision are useful in bringing into play partially paralyzed or non-paralyzed muscles to take the place, as far as possible, of those which are useless. We should impress upon the family that tedious and self sacrificing attention to treatment is necessary to give the child the best possible use of its limbs.

If the residual paralysis is great and the child is crippled for life we have still another means of making its burden bearable and its life useful. I shall call this the psychic treatment and mention it briefly, leaving to your good judgment the methods of carrying it out and to your good sense the means of impressing it upon the parents. Because a child is physically crippled there is no reason why it should be mentally so and there is a tendency among parents, most of whom love the afflicted child the most, to spoil it and pet it and let its education and mental training be slack and not to stimulate the proper ambition in the child. These children should be told of the mental attainments of the blind Milton, the crippled Byron and the diseased Stevenson. Every attention should be paid to the child's education, to teach it to be patient and to endure and to stimulate its ambition to excel in some one thing. Idleness, illtemper and selfishness should be rigorously fought against and these children should be made to realize that their physical affliction in giving them more time for study and for thought may be turned into a blessing and that their usefulness to themselves and to mankind may be made as great as that of any living creature.

In a few years we hope that some serum will be discovered which will cure most of these cases in their incipiency, but until the disease is conquered let us do all that is in our power to lessen the deformities of these little ones and to stimulate their mental activities.

308 E. Franklin Street.

THE DIAGNOSIS OF HAY FEVER IN CHILDREN.*

BY

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Hay-fever is essentially a disorder of early life; fully three-fourths of all the cases occur before the fifteenth year, yet, we are prone to look upon it as an affection of adult life. The physician, encouraged by the thoughtless patient, too frequently allows this disease to masquerade under many misleading names

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*Read before the sixtieth annual meeting of the Pennsylvania State Medical Society, Pittsburg Pa., October 3-5, 1910.

—calling it catarrhal fever, spasmodic croup, autumnal fever, bronchitis, influenza, acute rhinitis, catarrhal conjunctivitis, etc. While the disease occurs most frequently in youth in the form of various transient catarrhs, simple, spasmodic and otherwise, it is the sequelae of hay-fever, annually repeated, that we find eventually seriously handicapping mature life, in the form of asthma, emphysema, cardiac and renal trouble. It is because hay-fever may be called anything, rather than what it really is, especially in children, that so much uncertainty is caused in its early diagnosis.

In the first years' manifestation hay-fever closely resembles the so-called "taking cold" in the child, or, in more severe cases, the beginning of whooping-cough, measles, influenza, or possibly typhoid fever. It is only among the more intelligent people that the catarrhal occurrence this year is recognized as similar to its manifestation of the year before; and it need not be in August, or any fixed time—because the periodicity has not been established. If intestinal toxemia be recognized as an etiologic factor, and this form of toxemia is most prevalent in children, it may occur at any season.

We are all familiar with the orthodox symptoms of hay-fever in a young adult—it is too frequent during the summer months for us not to recognize the clinical picture. After the second year of the attack we may discover a tendency to periodicity of occurrence. Ofttimes, among nervous patients a certain day is actually selected to launch the annual attack. This fixed day (possibly August 15) is found more often among those who present a well-defined neurotic temperament. The invasion of the disease is generally sudden, almost explosive in its abruptness—a few hours may change the whole aspect of the individual. Usually a few days of illness—fever 99 to 101 degrees; some itching of eyes, nose or throat may be recognized several days in advance of the catarrhal infected eyes and nose. The discomfort of the fully developed attack must be experienced to be fully appreciated. The free and acrid discharge from the nose, the violent paroxysms of sneezing, eventually the blocked up nose, the keen distress to light, the free flow of tears, the swollen and burning eyelids, the enforced mouth-breathing and associated dry throat and frequent cough, make up a picture of deepest distress and an object of our keenest sympathy. The symptoms-complex closely resemble an exaggerated onset of measles or whooping-cough. This severe stage of the disease, however, is not reached in one season—it is the gradual expression, increasing from year to year. It is frequently not until the child has had three or more annual attacks that the real trouble is forced home that the child has hay-fever and the onset becomes sudden. The younger the child the milder the prodromal symptoms and the closer they will resemble the catarrhal stage of measles or whooping-cough. The neurotic inheritance may, however, early change the picture from the simple catarrhal to the spasmodic type and frequently blur it by rendering difficult an early discriminating diagnosis. The difficulty is well illustrated by citing a case of recent occurrence.

Edna, four years of age, only child of neurotic parentage, left the city early in June, 1910, for the summer. She was in perfect health at this time, had had none of the diseases of childhood, was well developed in every way with the exception of a tendency to take cold, which was traceable to the presence of a small mass of adenoids. She has a marked bending forward. The child spent four weeks in Atlantic City and two weeks longer in a summer hotel in the Blue Mountains of Maryland. During the last week of August she complained of weariness in her walking, lost her appetite, and was peevish and difficult to amuse. The mother heard stories of typhoid fever, measles and whooping-cough in her conversation with guests in the hotel, although she nor the child did not come, knowingly, in contact with any exposure. As she had left Atlantic City to escape the prevalence of measles and whooping-cough, she became unusually alarmed over the child's indisposition and brought the child to her city home, the latter part of August. Two days after her arrival home, the child's nurse brought her to my office when I found her with a fever of 101, a slight rhinitis, a white tongue, infected conjunctiva, and swollen pharynx. She presented all the early symptoms of measles at this visit. I ordered her to bed with a calomel and saline purge, with instructions to remain there for several days. I visited her the following day and found her rhinitis much aggravated, with marked photophobia. The eyes were infected and red, the nose swollen and an acrid discharge much in evidence, associated with a spasmodic cough. This catarrhal condition continued for nearly one week, when it slowly subsided. Her temperature gradually declined under rest in bed, purging, bathing and simple diet. The child, for four or five days gave strong evidence of the catarrhal stage of whooping-cough or measles. I could not discriminate, and I so informed the mother. I was justified in my decision by the fact that the child was exposed to both diseases during her visit in Atlantic City, as well as her stay in the summer hotel in Maryland. I have had a number of children of this tender age who have passed through similar trains of symptoms without developing either whooping-cough or measles. As Edna has a small mass of adenoids and is a sufferer from constipation, an inheritance associated with a neurotic temperament, I am inclined to attribute the feverish and catarrhal phenomena to the early expression of hay-fever, aggravated by intestinal toxemia. The mother informed me that this is the second, if not the third, autumnal attack the child has had, and, while this season's expression is much more severe, yet she recalls last years' phenomenon and her fears at that time that her child was developing measles or whooping-cough.

The diagnosis of hay-fever in the adult presents little difficulties after the habit is once established—like whooping-cough, it speaks for itself—but in the young we are surrounded with many difficulties. The disorder is slow in defining itself, depending largely on the temperament and environment of the child. It is the comparative suddenness of the onset as well as its sudden departure, the violent paroxysms of sneezing, and the character of the nasal discharges which are the peculiar features of hay-fever in the adult. The first attacks are likely to be mistaken for ordinary coryza, but here the abrupt onset, the characteristic puffiness of the eyelids, the absence of constitutional symptoms will indicate the difference. In children, moreover, attacks of hay-fever are most liable to be mistaken for acute colds or rhinitis,—but here, again, the above points may serve to distinguish the trouble; together with the sequence of the symptoms, the time of year, and the physical signs of an acute bronchitis, if it extends so far. The approach of cold weather and the coincident departure of all symptoms will make clear a diagnosis, while the history of previous attacks at the season of the year most favorable to hay-fever, the presence of certain irritants, and the general condition of the bodily symptoms may be of aid in distinguishing the affection. In acute rhinitis there are several stages, viz.: First, a dry stage, lasting for a few, say twelve, hours; second, a serous discharge lasting two or three days; and, third, a mucopurulent discharge continuing for three to five days,—while the entire attack runs its course in from five to ten days if no complications ensue. In hay-fever there is no dry stage; the discharge from the outset is purely serous and never mucopurulent during the entire course. The nasal discharge in hay-fever is sometimes slightly opaque and it may contain some few epithelial cells and viscid mucus. In acute rhinitis examination of the nares will show an inflammatory area while the hay-fever shows none. Hay-fever is a vasomotor paresis, and is easily diagnosed from inflammatory coryza by the swollen bluish-gray appearance of the inferior turbinated bones, and by the fact that the first train of symptoms continues through to the end. Examination of the nares will disclose occlusion due to the swollen turbinated bones lying in contact with the septum. The appearance of the mucous membrane itself is characteristic and only slightly resembles an inflammatory process. It is markedly swollen, not bright red as in rhinitis, but bluish-gray, covered with a thin, slightly viscid, watery serum, giving it a glassy, semi-translucent, at times opalescent appearance. Again, the marked puffiness of the eyelids, the great suffusion of the eyes, the photophobia, and even epiphora are distinguishing features of hay-fever.

The sensitive areas spoken of, particularly those on the lower and posterior parts of the septum and the inferior turbinated bones, are of value in differentiating hay-fever, and the markedly pronounced paroxysms of sneezing are very prominent in hay-fever.

People are subject in the changeable climate of spring and early summer to catch colds, and especially is this true of those prone to catarrh. These cases are sometimes mistaken for hay-fever. The readiness, however, with which they yield to anti-catarrhal treatment shows their nature.

From what I have observed and recorded, I am convinced that hay-fever is not usually recognized in young children, it passing through the physician's care under many names in some form of catarrhal fever, coryza, autumnal or summer cold; many titles for slightly varied pathological conditions. If this be so, we are dealing with a disorder fully as prevalent as tuberculosis, and, though not fatal, is equally distressing. Hay-fever in children is milder and more varied as to time of occurrence, the habit-period having not been established. This habit-period of the disease is especially difficult to dislodge, as is well seen in the adult, but in the young it presents the most favorable conditions for treatment.

Hay-fever, therefore, is like diphtheria, a local expression of a systemic toxemia, and for its relief ofttimes calls for the making over of the child, physically as well as mentally.

1411 Spruce Street.

WHEY AND CONDENSED MILK IN THE TREATMENT OF INFANTILE ATROPHY.*

BY
JOHN ZAHORSKY, M. D.
St. Louis, Mo.

It is not the purpose of this article to enter into a discussion of the etiology and pathology of the disease, known as athrepsia, marasmus, atrophy or decomposition (Finkelstein). It will suffice for our purpose to state that the exact pathological physiology is yet to be worked out. For the clinician it is immaterial whether the disease depends on atrophy of the intestinal mucous membrane, degeneration of the Paneth cells, or deficiency of the somatic cells or ferments. It is a clinical fact that with proper care the majority of these infants will get well after a more or less lengthy interval. Keep them alive and after weeks or months the infant will commence to gain in weight on a great variety of foods and ultimately develops into a normal child; at least this is the rule. What changes have taken place in the metabolism of the infant during this time we know not. There has been some kind of internal adjustment so that food which was not appropriated by the tissues is again properly utilized. That some kind of change, analogous to that produced in acquiring immunity to bacterial toxins, is gradually brought about by the organism is a very plausible theory, but Hamberger, and others were unable to prove it experimentally in regard to protein.

Another well known clinical observation is that whereas the atrophy, or continued loss in weight, may persist indefinitely, there is never a time when with the proper adjustment of food we may not expect a change for the better. Human milk for example in all the milder cases—class one and two of Finkelstein—with few exceptions results in a gain in weight after a few days. But as human milk is not always available, recourse must be had to artificial foods. And here lie the undetermined questions. What foods should be given? (1) What combination of the elements of food is most successful? (2) What is the proper quantity to give? (3) What energy quotient should the food contain? What is the desirable nutritive ratio to maintain?

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*Read before the Bethesda Pediatric Society, February, 1911.

Our experience at the St. Louis Children's Hospital this summer, I believe, has thrown some light on these questions and it is the purpose of this article to state our conclusions as a contribution to the study of the subject.

But before taking up these reports it is necessary to state a few fundamental principles which have been suggested by clinicians. Rotch and others years ago taught us that the fats are not tolerated by a majority of these cases. Hence, the food must not contain very much fat. This has since been corroborated by others, especially the Breslauer and Berliner schools. Exception, however, must be made in cases fed on human milk. This has been the chief guiding rule in feeding such cases and in private practice I have been fairly successful in these cases by giving a mixture containing a cereal decoction with sugar (three or four per cent.) to which skim milk, or buttermilk, or peptonized milk has been added. These methods tried at the children's Hospital did not give good results. The atrophy continued and the infants were dismissed after a few weeks as unimproved, or they succumbed.

It is unnecessary here to enter into a discussion of the well known poor results in hospitals. Suffice it to state that we took all precautions possible to prevent infections. In other words, the essential hospital asepsis was strictly carried out, and the infants were given the proper airing, although I must admit that their exercise was rather deficient.

One striking change in the metabolism has been discovered in recent years, namely, a great loss in the mineral matter. As Langstein and Meyer state, "the clinical picture of decomposition is dominated by the loss of the mineral constituents." The exact interpretation of this is not clear, but it gave me the clew to follow out the treatment finally adopted. Contrary to the teachings of Finkelstein and Meyer, it seemed to me that the atrophic infant should be given an abundance of salts. Our own limited experience with the casein milk of Finkelstein, and other mixtures containing a very high percentage of protein, was that no better result was obtained than with the ordinary buttermilk and barley mixture. The recent experience of Chapin, (J. A. M. A., October 22), only strengthens our position that the giving of high protein is only exceptionally successful. But it should be remembered that the object of the casein milk is not to produce a gain but only to stop the tremendous loss. To produce a gain Finkelstein recommends the addition of carbohydrates. We have found the ordinary acidified skimmed milk mixed with barley water (equal parts with three per cent. sugar added) one of the best foods to stop the loss in weight. Sometimes acidified milk forms two-thirds of the mixture. The atrophic infant is kept on this for one week or more. Among other benefits this often changes the bacterial flora of the intestine and prepares the infant for the whey mixture. As a rule the acidified milk and barley mixture does not cause an increase in weight, although, it must be admitted, no such high caloric values were given in this mixture as in the whey mixture to be described below.

The recent contributions to this subject by English writers who also use a mixture containing a high protein percentage with two grains citrate of soda to the ounce of milk impressed me very much. We made a few trials of this but found it no better than our acidified milk and barley mixture. The sodium citrate, however, does supply the tissues with an excess of alkalies which may be very advantagous at times to supply the loss of sodium and potassium salts.

But to come to the food we are using successfully at present.

Several years ago Dr. E. W. Saunders suggested a whey and condensed milk mixture for the treatment of marasmus which had given him better results than any other in practice. He mentioned this at one of the meetings of the American Pediatric Society. His formula is one level teaspoonful of sweetened condensed milk to three ounces of whey.

In taking up this food I first calculated its composition. According to Van Slyke, Rotch, etc., whey has the following composition:

Protein	0 .9
Fat	0 .4
Sugar	4 .7
Ash	0.65

The composition of condensed milk (sweetened) is (U. S. Department of Agriculture):

Protein	7.4
Fat	8.5
Sugar	5.4
Ash	1.8

By actual weight it was found that a level teaspoonful of condensed milk weighs 110 to 120 grains.

Parenthetically, it may be stated that some of our calculations on condensed milk in the past have been wrong. When a level teaspoonful of condensed milk is mixed with two ounces of water the dilution is not one in sixteen, as we have been taught, but one in eight. This explains the mystery why many young infants thrive on this food. It really has a very rational composition: protein 1. fat 1. sugar 6.5.

Let us return to our whey and condensed milk mixture. Its approximate composition is as follows:

Protein	1.5	per cent.
Fat	1.1	per cent.
Sugar	9.2	per cent.
Ash	0.8	per cent.

Each liter contains about 530 calories, or one fluid ounce contains at least 15 calories. The nutritive ratio is one to eight approximately. It contains a very large amount of mineral matter greatly in excess of that in human milk. Even the iron is not deficient. Very noticeable is the large percentage of carbohydrates, far in excess of what is usually given as the safe maximum. In fact, the composition somewhat resembles that of Keller's malt soup except that the nature of the carbohydrates and protein is somewhat different. The salts also are greatly in excess.

It will be noticed that two kinds of sugar are present. In fact a valuable therapeutic resource for the feeding of difficult cases is to combine several carbohydrates. For some time I have made it a practice to combine several varieties of carbohydrates in the same feeding. Often a combination of starch, dextrin, lactose, saccharum and maltose enables the infant to utilize a very high percentage of carbohydrates and thus very materially increase the energy quotient.

Another valuable feature of this formula is the relatively high nutritive ratio, much higher than that in human milk.

The deficiency of casein suggests that it should not be prescribed as a permanent food.

We have records of 15 cases in the Children's Hospital; nearly all of them responded almost immediately to the good effect of the combination. I have had also a number in private practice.

Now what is our answer to the questions propounded above?

(1). The food of the marasmic infant should consist of an abundance of mineral matter with a high percentage of mixed carbohydrates. The fat percentage should be low and the casein low.

(2). The proper quantity to give is near that given a healthy infant of the same age and not one of the same weight. Thus an infant six months old should receive at least five ounces every three hours.

(3). We were not surprised to learn that these infants require an enormous amount of food. An energy quotient of 150 calories to the kilo seems to be the best. On less food than this the gains were unsatisfactory.

Clinical reports will be published later.

1460 S. Grand Avenue.

POLIOMYELITIS, REPORT OF CASES, ELECTRICAL TREATMENT.*

BY

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The following notes refer to cases which have been under my care at the Memorial Hospital during the past two years. There have been other paralyses during the same period due probably to poliomyelitis, but in those cited the diagnosis is reasonably sure.

The first case treated was that of a little girl, five years old.

No. 1. (S). Several months before she had a short attack of fever; other symptoms not clear. She presented a flaccid paralysis of right leg, thigh being normal. No improvement had been noted by parents for some time. Under electricity she began at once to get better. About fifteen (15) treatments were given and the case seems to be cured. I have heard from her recently, after eighteen months since last treatment.

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*Read before the Tri-State Medical Association, Raleigh, N. C., February 23, 1911

No. 2. (R)., was a boy of five years, who had been paralyzed for over twelve months. He walked, throwing the right leg in the usual manner of a flaccid paralysis. The limb was colder than the other and considerably atrophied, or under developed. Reaction of degeneration was present. Massage had been used. He received electrical treatment from time to time for several months with some improvement, but not such that his parents thought best to continue.

No. 3. (F)., was three years old, when he had sickness of an indefinite character,—"stomach attack." During convalescence paralysis of the right limb was noted and this and general weakness made him unable or unwilling to walk, although he had done so before his sickness. For a considerable time he also did not try to talk. After four months, without any special treatment, the limb was found to be behind the other in muscle and bone development. Reaction of degeneration was present.

Electrical treatment improved his general condition and the paralyzed limb began to be of use; after six months he was walking. He left the hospital for a while, returned and received another month's treatment. He has been fitted with a brace under the direction of Dr. W. P. Matthews. The muscles have filled out, but there is some deficiency of bone.

No. 4 is that of Dr. B., about 26 years old. He had poliomyelitis when he was 14 years old. Paralysis of left leg resulted. Under treatment for a few weeks he noticed some improvement in function. He stopped on account of removal to another city, and has never begun treatment again, but claims to have held improvement. This case is interesting on account of long time since the acute condition.

No. 5. (C)., likewise is that of an adult patient, 22 years old. He had poliomyelitis ten years ago, followed by paralysis of left shoulder,—deltoid and spinati cheifly involved, arm considerably smaller than other. On beginning treatment he had his measurements carefully taken by a gymnasium instructor; after three weeks of electrical treatment and suitable physical culture he found that both arms had grown, but the left more than the right. He was much encouraged by this and has had two courses of treatment since.

These two cases seem to suggest that valuable results may be reached in old cases.

No. 6. (P). Little girl six years old, referred by Dr. Wm. B. West. She presented a lack of function of right leg and was unwilling to try to walk alone; atrophy was not marked. Massage and prosthetic appliances had been tried. Under electrical treatment she began to improve and came to the hospital, off and on, for six months. Her recovery was satisfactory.

No. 7. (W). Female child from Lynchburg, Va., under two years old. Three months before she had a severe attack of sickness, followed by marked debility. She was then brought to Dr. W. P. Matthews. The right leg presented a flaccid paralysis; no atrophy noticed. Two courses of treatment, of two weeks each, were given with interval of two weeks. At this time she presented sufficient recovery to be fitted with a brace. Further treatment was prevented by other sickness in the family.

No. 8. (D)., was seen by a number of Richmond physicians, and came to me from the dispensary of the Medical College of Virginia; about six years old; he presented a paralysis of the right leg and general weakness. He received five or six treatments and then his mother stopped bringing him. I think that he began to show local and general improvement, but have heard nothing from him since.

No. 9. Miss W., 16 years old, referred by Dr. Stanley, of Hanover County, Va., through Dr. J. S. Horsley. At the beginning of attack first noticed pain in her left knee, spreading to right knee, to back and to back of head. Within twenty-four hours she lost consciousness and was so for two weeks. She had high fever, was obstinately constipated and bladder was involuntarily emptied at intervals. On recovering consciousness, she was unable to move; pain continued another two weeks, after which she began to use her arms. She came to the hospital six weeks after initial attack. At that time she was paralyzed from the waist down. Thighs and legs were flaccid; reflexes lost, with reaction of degeneration. She was still running some temperature and still requiring continual treatment for constipation and had to be catheterized. After three or four days catheterization was no longer necessary. At the end of a week electrical treatment was begun. She remained at the hospital four weeks and was then allowed to go home for three weeks. This alternation has been followed for six months, except that an attack of malarial fever upset the order for a short while. She has received general massage at intervals and daily massage, directed particularly to knees and ankles.

Improvement has been steady. With the help of crutches patient can now use all muscles, except those below the knee on the left side.

No. 10. Is that of the infant son of Dr. F. W. Beadles referred by Dr. St. G. Grinnan. The case presents the history of a sudden attack with high fever, vomiting, diarrhea, unconsciousness, and sometimes screaming as if with pain. This was during two weeks. At the end of the fourth week he had some pain and was paralyzed in legs, body, and partially in the arms. He was then sent in for treatment. The right leg was the worst. At the end of the second month he began to walk, and now, after two months longer, he seems to be nearly well. There is no atrophy or inequality in the limbs. There is a slight bending in of the right knee.

The case has had general massage at intervals and the joints have been rubbed daily

No. 11. (C). Little boy three and one-half years old. On September 19th, while in the country, he had a "bilious attack," and was sick three weeks. He was then taken to Richmond, although hardly able to be moved. He was there placed under the care of Dr. Manfred Call, who afterwards referred him to me for electrical treatment.

His symptoms from the beginning of the acute attack were fever, pain in limbs, back and back of head; his head was rigid and drawn back; at times he was unconscious. This condition continued after coming to Richmond and lasted six weeks. Lumbar puncture relieved him somewhat. The fluid was accidentally lost and therefore not examined. Acute symptoms gradually subsided by end of second month. He then presented a flaccid paralysis; was unable to move either leg or to sit up; there was incontinence of feces and urine.

He has now been under electrical treatment for two months, with massage. His improvement has been marked and he can now sit up, climb, and walk with some support.

No. 12. (H). Male infant, two years old. Had a "cold and stomach attack" after open-air ride of twenty miles. He had fever, was obstinately constipated, no pain; attack lasted a few days. Afterwards he was emaciated and could not use his right arm, fore-arm and shoulder.

He has had treatment, off and on, for three and one-half months and is much improved as to general condition, arm and fore-arm, and slightly as to shoulder. A little atrophy of shoulder is noticed.

The method of electrical treatment in these cases is by the use of the static current. In adults and larger children I use the *bi-polar continuous* current; but in infants only one electrode, the return being through the air; and the dosage is still further modified by having the child held by the nurse, who receives a large part of the current. This current is comparable to the galvanic, but is much more effective on account of its high voltage.

The use of the faradic, or its static analogue, the *bi-polar interrupted* ("static-induced"), is in my opinion a doubtful procedure. My reason for thinking so is that *rest* is the first requisite in these cases, and fatigue should be carefully avoided. I therefore use these powerfully stimulating currents only sufficiently to be sure that the muscles are continuing to be irritable.

I believe that the sort of activity which is required for the recovery of the neuro-muscular and other structures involved is the vegetative, or metabolic one, rather than the special activities, such as muscular contraction and discharge of nerve-energy.

I have had no experience with the use of galvanism in the relief of pain during the acute attack, which is supposed to be accomplished by causing enough contraction to prevent the painful dragging upon flaccid structures; neither have I had occasion to try water-suspension as a means of supporting the patient and inducing gentle exercise.

As to after-treatment in general, I would mention rest; judicious massage, the continuous current, with very limited exercise, none of these being used to the point of fatigue; splints and other orthopedic appliances to assist the weakened structures, and surgical correction of deformities and deficiencies otherwise intractable; the general building up of the patient and the re-education of the neuro-muscular apparatus.

As to the last, varied movements of crawling, climbing, blocks to play with, games, etc., are educational and are to be preferred to over-use in any one direction, as in walking. I have sometimes found it necessary to tie up a well arm in order to force the use of the injured one.

It is a great pleasure to see these helpless cases improve in general tone and in local function under the use of appropriate treatment. We expect some recovery anyway, but usually this is far from complete; therefore every means of assisting nature should be employed. Among other well-tried agencies we should not overlook the proper use of high-potential electricity.

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MEDICAL MILK CHARITIES.*

BY
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Introduction to the Report of a Committee on The History, Development and Statistics of Milk Charities in the United States made through the Surgeon General's Office.

While it is true that the chief object of a Medical Milk Commission is to obtain milk especially designed for clinical purposes (certified milk), yet the altruism of this movement finds a wider scope for its activities than simply to secure for the sick and for the infant, milk which will fulfill the exacting requirements of the physician.

The more than a quarter of a million babies who died in the United States last year, a like number of whom die every year, were the unsuspecting victims of ignorance or disease—ignorance of hygiene and the proper use of milk and of disease, the greater part of which was caused or conveyed by milk.

The close relation of clean milk to the professional work of physicians or to those who study mortality and race perpetuation is now unquestioned. The outcome of this relation is not only momentous but imposes heavy responsibilities upon the profession, the community and the state.

There is no civic duty of more vital importance or obligation upon philanthropy more urgent than the rescue from suffering and death of infants of the poor who are in danger of losing their lives through ignorance of the means for their safety.

It has been demonstrated that to take these appealing human creatures and put them under slightly improved conditions of hygiene in their homes, placing in the hands of the mother a few simple instructions and giving her clean milk adjusted to the baby, that the otherwise shocking mortality among them may be uniformally reduced to from three to nine per cent.—a mortality reduction of 60 to 85 per cent.

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*Read before the Fourth Annual Meeting of the American Association of Medical Milk Commissions, St. Louis, June 6th, 1910.

As a result of the work of milk charities, the following percentages were secured in the mortality of infants under the care of these institutions in European cities in 1909 where the general infant mortality was from twenty to thirty per cent: Vienna, Austria, nine and one-quarter per cent; Lille, France, eight and three-tenths per cent; Budapest, Hungary, seven and nine-tenths per cent; Hamburg, Germany, seven and nine tenths per cent. and Brussels, Belgium, five and one-half per cent.

In the United States in the same period the results in cities where the general infant mortality was from twenty to twenty-five per cent. were as follows under the influence of milk dispensaries: Babies' Milk Fund Association, Baltimore, eight per cent; Babies' Dispensary and Hospital, Cleveland, seven and three-tenths per cent; Babies' Milk Fund Association, Louisville, six per cent; New York Diet Kitchen, New York, two and three-quarters per cent; Milk and Baby Hygiene Association, Boston, two and one-half per cent. and in my own city, Newark, New Jersey, in a charity where good milk was the chief factor, we were able to reduce the mortality to two and one-half per cent. among over five hundred tenement house babies with very little instruction.

Clean milk and its utilization by those who can afford to buy it solves the most important problem in the family and, through the help of philanthropy, its employment in the nutrition of the infants of the poor, who cannot, without assistance, afford to buy it, solves the most distressing problem of poverty.

Before proceeding with this discussion, we should become familiar with the beneficiaries of medical milk charity as well as with the agency itself. Some one has aptly divided the poor into three classes, namely, "God's poor, the Devil's poor and the poor devils " On this classification, I will define them.

"God's poor" are those whose misfortune is not of their own creation nor the result of their own acts but is brought about through circumstances over which they have no control. They generally soon rise superior to their misadventure and deserve to be helped because very often they conceal their want and need to be sought out. They are always amenable to instruction, are grateful for help and soon utilize the assistance to their own good and the benefit of those who are dependent upon them.

The "Devil's poor" are they who reach poverty by their own deliberate transgression of physical and moral laws. They do not seem anxious to do better and they are unable to take the initiative to escape from poverty without help. They are easily discouraged but with the judicious application of the principles of true charity, which stimulate effort and self-help, this class finally do well and make good. It pays to assist them and they and their families often become good and useful members of society.

The "poor devils" are a class by themselves. They have no resources either inherited, native or acquired and no assistance will avail to stimulate them to effort. Good work done for them is immediately neutralized by indifference or paralysis of interest with no appreciation of kindness. A mother of this class will make the work of charity of no effect by inertia, dirt, squalor and laziness and her child finally dies in spite of the good samaritan who places it in a hospital for a time, because, on discharge, it lapses into its former condition and dies if the mother does not hasten its death by throwing it off the dock. Nevertheless humanitarian instincts demand that charity shall lessen the sufferings of this child while it lives.

The agency employed for the amelioration of much suffering among infants was called "Goutte de lait" by its founder, DeFour, who, in 1892 in a provincial town in France, established a station for the distribution of milk for infants who could not secure breast milk. He was soon sought by Budin of Paris who had him add this feature to his "Consultation de Nourisson." This combination was established in 1892-4 and was the beginning of a world-wide extension of this wonderful means of protecting and saving infant life.

There have grown up in recent years many child's welfare agencies for the moral, social, mental and physical uplift of the child, but none has been so potent for good as the Consultation for Nurslings and the Milk Dispensary. We owe its development to such men as Lust in Brussels, Sperk in Vienna, Deutsch in Budapest, Anderson in Glasgow, McCleary in London, and to Koplik, Getty and Goler in our own country.

The "Goutte de lait" as now organized in the large and populous centres of Europe and the United States includes the following features:

(*a*). To continue to furnish good milk to infants leaving a hospital.

(*b*). To provide suitable milk for sick infants brought by mothers to hospital clinics and consultations.

(*c*). To conduct consultations for the instruction of mothers with nurslings and supplement their failure with good milk when necessary.

(*d*). To maintain visiting nurses to gather statistics, give instruction in the proper use of milk and teach infant hygiene in the home.

Some large milk philanthropies have recently contended that the modification and distribution of milk protected in separate feedings is unnecessary, that its large expense is prohibitive and that the work of visiting nurses in the home to teach the mothers how to prepare the food is less expensive and quite as serviceable to the baby as the older method of milk distribution.

It seems premature to make this wholesale accusation against the distribution of properly modified milk without first having had a few years of experience from which to draw accurate conclusions. Having had experience with both methods, I am prepared to assert that the method of preparation and distribution is more economical than the method of instruction applied by the nurse in the home.

There are many advantages which seem to be lost sight of by the advocates of instruction alone. The class which is thus benefited is not usually intelligent enough to apply domestic cleanliness even after having been shown how, and the instruction would generally be neutralized by indolence, incompetence and inability to see the importance of domestic cleanliness. The lack of intelligence to properly interpret the instructions would be fatal to success without an enormous amount of repeated labor on the part of the nurse. Her time might better be employed in teaching hygiene.

Modified milk, adjusted to the needs of the infant, not only protects the food from contaminations due to carelessness and unhygienic home conditions but it saves the expense of utensils difficult to assemble for each case and time which is better applied to the baby's management and care. Dispensary milk is a distinct advantage to the sick baby which can be better individualized by flexible and suitable mixtures designed to meet its present and growing needs.

The claim that it is cheaper to teach the mother to modify milk does not take into account the fact that the extra cost of utensils, fire, sugar and time falls upon the poor; whereas, when these expenses are borne by the charity, the modified milk including them costs the poor no more than the unmodified milk alone. It is supposed of course that the poor are required to pay about two-thirds the cost of the milk and its preparation which is about ten cents a day.

When the time of the expensive visiting nurse is diverted from teaching hygiene in the home to instructions in home modification with the constant supervision necessary to effect perfection in detail, the total expense of a day's supply of milk is materially increased.

The doctrine that it is a waste of money to distribute modified milk and that it is a negligible factor in reducing infant mortality is contrary to the experience of the hundreds of agencies which are distributing modified milk to the poor. A milk charity or Goutte de Lait which did not distribute modified milk would seem ludicrous and the appellation would be a misnomer.

Among the advantages of this life-saving agency are the following: It places at the disposal of physicians, many of whom are not well trained in the principles and practice of infant feeding, proper formulae for his poor patients. It simplifies very much his practice among the poor by its system which becomes a guide to the mother who has no training whatever and who would otherwise negative all proper medical advice. It also enables the physician to obtain results in many feeding cases in which they could not be otherwise secured.

It opens up a practical and efficient means of carrying on an educational program among a class in which a lack of knowledge is the most potent factor in their destruction. It is fundamental in all problems of life that difficulties disappear with the enlightenment of knowledge. The highest function and chief purpose of a milk charity is the spread of useful knowledge of the kind which will lift the discouraged mother with her dying child to the plane of self-help.

The milk depot furnishes a central rallying point for the activities of several charitable agencies in a community and by the one material factor for the accomplishment of its results, namely, milk, it secures for all these social workers the confidence of the poor and enables them to obtain the information desired, which, without the milk for the baby, would not be readily given nor the other assistance graciously received.

There is no work to which physicians devote their professional thought with the object of securing results in preventive medicine which yields nearly so large a return as that performed in a properly organized medical milk charity. This is explained by the fact that in the consultations held in connection with the "Goutte de lait" or milk dispensary and aided by the visiting nurse in the home, statistics on viability, morbidity and mortality and the social conditions of the poor may be obtained in a more complete form than by any other means and these statistics become a valuable asset to the physician in his study of medical problems.

The integrity of every charitable institution rests upon public confidence. Public confidence depends upon the fact that the organization has wise management, trained supervision, moral backbone, harmony in all its working parts and unselfishness of all members in their devotion to the objects of the charity.

No milk charity should be under dual management, nor should it be under the exclusive direction of laymen or societies of philanthropic women. The required trained supervision would make the physician the logical director of this kind of work. Philanthropic laymen of means, engaged in this work, become too enthusiastic and without a guiding hand miss the mark by overstepping the bounds of charity and pauperize the poor.

The whole scheme of a milk dispensary or milk charity is the outgrowth of medical thought and judgment and the main object sought is the solution of medical problems. The medical director should be selected because of his experience and familiarity with infant dietetics so that he can deal with malnutrition and its allied affections. His judgment is required to discriminate between worthy and unworthy cases and he can best devise methods of treatment.

The relation of the Medical Milk Commission to the organization and conduct of milk charities deserves a word. This body is appointed with a definite purpose, namely, the certification of milk for clinical purposes and if this is done properly, it would have little time for administering milk charity.

Aside from the misery averted, the sickness prevented and the death from diarrheal diseases cut down, a medical milk charity is justified if for nothing else than to prevent tuberculosis among children, which, through cow's milk, constitutes about one-third of all cases among them. In some forms, namely, the glandular and abdominal tuberculosis, about fifty per cent. is of bovine origin through tuberculous milk.

I wish here to refer to Park's conservative figures given at a recent meeting of this association on seventy cases in which the type of the bacillus was identified and differentiated. Thirty-five of these cases, which were fatal tuberculosis in children, showed twenty-two per cent. of bovine origin and the other thirty-five cases, which were non-fatal surgical tuberculosis, showed that nearly twenty-eight per cent. were of bovine origin or due to milk infection.

The following deductions may be made from the foregoing statements, namely:

First. That the largest material factor in the conservation of human life in the first year is clean milk, suitably adjusted to the needs of the individual infant.

Second. That the widespread morbidity or sickness among infants, mostly caused by bad milk and ignorance, is proved by the marvelous results of the work of infants' hospitals and milk dispensaries with good milk and instruction.

Third. That this is the most practical and economical means of preventing sickness and death yet devised in cities when coupled with the education of mothers of the poor in methods of care, of bathing, of feeding, of domestic cleanliness, the care of milk and the principles of infant hygiene.

Three lines of activity suggest themselves for extending relief among mothers and their infants.

First. The distribution of printed matter bearing simple instructions on (*a*) the value of maternal nursing, (*b*) the care of milk, (*c*) domestic cleanliness, (*d*) proper management and care of the infant.

Second. Engage the services of visiting nurses in the home to carry to the mother encouragement, sympathy and to give her practical demonstration of proper hygiene and instruction in feeding.

Third. The distribution of artificial food intended for infants. (*a*) **Adjusted** to the needs of the individual infant, (*b*) **refrigerated** so that it will keep without spoiling, and (*c*) officially **certified** by a Medical Milk Commission to guarantee its safety.

SOCIETY TRANSACTIONS

ST. LOUIS PEDIATRIC SOCIETY.

Stated Meeting, December 15th, 1910.

Meningitis. Dr. John Zahorsky: Mr. President,—This child was brought to the Children's Hospital with a history of having had fever for two or three days, had vomited once. On the day following admission, I noticed a retraction of the head, although we do find this symptom present in cases other than meningitis. The child presented Brudzinski's neck sign very nicely and on the following day there was distension of the fontanelle and contra-lateral reflexes. This is the only baby under one year of age that I have ever seen get well.

I saw another case, girl three and one-half years of age. She was sick three days, started with vomiting, also had retraction of head. Kernig's sign was present but not to extremes, she also presented Brudzinski's neck sign very nicely. Dr. White performed lumbar puncture.

Dr. George M. Tuttle: The first case mentioned was turned over to my department and a lumbar puncture was made on the 10th of November, and 15 cc. of perfectly clear fluid withdrawn. Two days later a second puncture was made, the fluid withdrawn this time was cloudy and Flexner's serum was used. Injections were made on the 11th, 12th, 13th and 14th; 60 cc. in all of anti-meningitis serum was used. The third was a dry tap and the fourth produced considerable bulging of the fontanelle. Two days later four ounces of fluid was taken out and on the 26th another puncture was made and six ounces and three drams were taken out. The baby seemed to be much better but was very irritable. I made a measurement of the baby's head about the 7th of December and found the head was enlarged. I am afraid the child will develop hydrocephalous. The last lumbar puncture was made on the 12th of December. Dr. Harris does not think that injections should be given after organisms can not be found. When I first saw the child I thought it was a fatal case of meningitis and I think that the inprovememt is probably due to Flexner's serum.

Dr. Smith: I had been observing the child and noticed that, after a rise of temperature on the 25th of November, Brudzinski's and Kernig's signs returned at the same time and I also noticed that they disappeared at the same time.

Dr. P. G. Hurford: When I saw the child its color was good and bowels were normal. It had an exceptionally rigid neck and its temperature was 104.8. I thought perhaps it was intestinal trouble.

Dr. J. W. White: I did a lumbar puncture on the second case mentioned by Dr. Zahorsky and withdrew one-half ounce of slightly cloudy fluid. On superficial examination found a diplococcus present. Dr. Zahorsky thought it advisable to use Flexner's serum and after an ounce of fluid was withdrawn, 15 cc. of Flexner's serum was injected, but on a full examination the organisms were identified as numo-coccus and 15 cc. of numo-coccus serum was injected. The child died that night.

Congenital Hypertrophic Pyloric Stenosis.—Presentation of two cases by Dr. E. W. Saunders.

Dr. Saunders: I want to bring before the profession the use of tube feeding and see what can be done with it in this condition. I am quite enthusiastic on the subject of tube feeding and never allow the child to swallow a single thing. The treatment of hypertrophic stenosis by occasional tube feeding and then nursing is absolutely useless. Tube feeding should be carried on at regular intervals of four hours and then three hours. At each introduction of the tube all food should be gotten rid of and the stomach started afresh. This gives the stomach a far better chance. One meal after another being retained would cause the stomach to dilate. I have had no failures in several cases at the present time. I am favorable to operation, but would like to do away with all measures that are useless and try tube feeding exclusively and keep a rigid account of how much was expelled, introduced, vomited and recovered, then strike a balance of what is left. I do not think surgeons have had a fair chance in these cases.

Dr. Tuttle: I had a case a year ago last spring; came to me when four weeks old, I tried faithfully for nearly four weeks to get along without the surgeon, all this time I made slight changes in the food. I asked Dr. Saunders to see the case with me and he asked whether I had tried gavage. I had not. I tried it and the baby stopped vomiting at once and after four weeks of exclusive tube feeding the baby was very much improved and in the course of four weeks more was discharged.

Dr. Gustave Lippmann: I saw two of Dr. Saunder's cases and both did so extremely well that I think we should all use tube feeding. I always felt rather doubtful about it but the next case I have will surely be attended to in that way.

Dr. Jules Brady: I would like to know what foods Dr. Saunders has the best results with, in tube feeding, and does he wash out the stomach with water?

Dr. Saunders: Most writers speak despairingly of using a tube and do not favor the use of it but refer to occasional tube feeding and washing of the stomach. The stomach should be cleansed each time the tube is introduced, and we get the best results beginning with fat-free fully peptonized milk.

RETROSPECT OF CURRENT PEDIATRIC LITERATURE.

Diseases of the Nervous System in Children

Under the Charge of

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The Role of Lime in Spasmodic Disorders.—During the last few years much interest has been taken by a number of investigators in determining the etiology of what is termed the spasmophilic diathesis.

Tetanus.—Quest (1) of Lemberg, and Schabad (2) of St. Petersburg are the latest investigators along this line. Quest has for some years been an adherent of the theory of deficient lime supply to the central nervous system, as the direct cause of spasmodic disorders, such particularly as tetany.

The small number of examinations reported by each of the several observers unfortunately does not permit one to draw very positive conclusions on which to base fair criticism. It is of course to be expected that considerable time must ensue before a sufficient number of opportunities are afforded investigators to examine the lime content of the brain in cases of the spasmophilic diathesis that properly belong to the class of unaccountable spasmodic disorders. Under such classification are to be placed, tetany, laryngismus stridulous, and the tendency to eclamptic attacks for whose causation no organic basis can be found. Under the latter may be included perhaps many if not most of those eclamptic attacks due to demonstrable, but mild reflex irritation; that is, irritation that in the average child ordinarily excites no eclampsia. The relative infrequency of a fatal issue in all of these instances naturally deprives the investigator of opportunity to determine the actual quantity of lime in the central nervous system. Recourse has been had therefore, to clinical experiments on the human being, and clinical and pathological investigations on animals, to determine the relation between ingestion and excretion of lime and the bearing of the results of such relation, that is the degree of systemic retention of lime, on the muscular and nerve excitability of the individual subject. Among these subjects of experiment were some individuals who prior to the experiments, and simultaneous with them, evidenced increased and abnormal nerve and muscular excitability, in the form of tetany, eclampsia or laryngo-spasm.

The gauge of the varying degree of excitability was determined by the minimum amount in milliamperes of a galvanic current, necessary to produce a muscular contraction in a given muscle on stimulation of the nerve.

In this paper Quest gives a resume of the work thus far accomplished in favor of the theory of lime deficiency as a cause of increased motor irritability.

It must be acknowledged that, as one views the evidence in the aggregate, there seems much in support of the hypothesis.

Sabbatani (3) in 1901 showed by animal experiments that irritability of the motor cortex to electricity increased as the calcium content diminished.

Quest himself then found that the calcium content of the infant's brain diminished under normal conditions rapidly during the first year. Referring to the experiments of Toyonagas who found that the gray matter of the cerebral cortex, at least in the horse and calf, far surpasses the white in relative proportions, and that this gray matter, contains much more lime than the white substance; and bringing to his support the results of Soltmann's (4) and

Paneth's (1) investigations, namely, that the electrical excitability of the motor cortex, in the new born dog, is almost nil; Quest argues that because of the large calcium content in the brain in the early months of human life, the spasmophilic diathesis is not common, but becomes more and more common as the age and the coincident diminution of calcium content advances, therefore there must be some close connection between that calcium content and the occurrence of eclamptic conditions. Quest actually determined in the brains of three children dying in a condition of tetany a deficiency of calcium content, compared with brains of children dying from other causes. Silvestri (5) who, during the last five years, has been an ardent advocate of the influence of calcium on motor stability, confirmed these findings of Quest, and not only in children, but in the case of the eclampsia of pregnancy. Weigert found a similar condition in the brain of a dog dying of convulsions following a change from mother's milk to artificial nourishment. The remainder of the experiments cited by Quest in support of his theory are clinical in character.

Quest fed four dogs on food containing no lime and found the electrical excitability diminished, with a blood calcium content of 0.10 per cent., compared with normal electrical excitability with blood calcium content of .014 per cent., in dogs fed on ordinary food.

Cybulski's (6) showed that in a seven months child with tetany, there was a diminished lime retention in the body during the period of the tetany, compared with the period of convalescence. Iddo and Sarles (7) also found increased excretion of lime in tetany. Numberless have been the therapeutic proofs of the efficacy of lime salts in tetany and allied conditions.

In 1901 Gregor (8) published the results of a study of the relation of nourishment to muscular hypertonicity, founded mainly on the long continued investigation of the electrical irritability of the nerves in two children with tetanic conditions. He found that the state of hyperexcitability to the galvanic current in these children was susceptible of influence by selected food.

Finkelstein (9) has also shown that spasmodic conditions may be closely related to the diet.

Quest refers to the defective secretion of the parathyroids as a cause of tetanic states, mentioning the animal experiments of Vassale and Generali (10) and Eroheim (11). The latter noticed in parathyroidectomized rats, not only tetanic and spasmodic states, but also evidence of defective calcification of bone.

It is well known how frequently tetany is associated with rhachitis in children. We know that *rhachitis* is characterized by defective lime nutrition. It remained, therefore, to connect the deficiency of the parathyroid secretion with some evidence of deficiency in the lime present in the body. This has recently been accomplished by the researches of Callun and Voegtlin (12). They show that in parathyroidectomized dogs, the excretion of lime in urine and faeces is increased, while the lime content of brain and blood is markedly diminished. Moreover, they show that the symptoms of tetany in the dogs disappear when salts of lime are injected intravenously. So also did the symptoms of tetany disappear in a thyroidectomized human being, following the administration of large doses of calcium lactate.

Quest believes that these facts point to lime deficiency as a cause of tetany. This lime deficiency may be brought about in several different ways, either by the administration of food devoid of calcium (such as meat), or by the removal of certain glands such as the parathyroids, thyroids or thymus; or by an excess of secretion of certain glands such as the suprarenals.

He believes that it is very seldom produced in the human by lime deficiency in the food administered, but that the deficiency in the blood and nervous system is rather the result of some defect in the nourishment that prevents the retention of lime. This, he believes, is the reason for the sometimes remarkable results of change of diet in tetany or allied spasmodic conditions. Czerny and his students, especially Rothberg (13) have shown that it is especially in over-feeding with whole milk, that the worst cases of rhachitis occur; and that in whole milk administration the calcium content was deficient, while it was normal when milk containing but little fat was given.

Quest, therefore, believes that the fat is the factor that prevents retention of lime, and suggests that it does so by the formation in the intestines of lime-soaps.

Flesch (14) and Birk (15) have also dealt with this subject (the former many years ago), and have also advanced the same theory.

Schabad, in a careful series of investigations on two tetany cases in children, comes to the conclusion that: 1st. The metabolism of lime and phosphorus in rhachitis complicated by tetany does not differ from that in rhachitis not so complicated. 2nd. That the improvement of the tetany under the influence of phosphorus and cod liver oil goes hand in hand with the improvement in lime retention, that is, in the recovery from the rhachitis.

The entire subject is one of great interest and demands far more space and time for its consideration than I am here allowed. Quest deserves great credit for his painstaking and valuable study of the subject. It seems as if the time were at hand for an even more comprehensive review of the entire subject, and especially a widespread recognition of the importance of therapeutic tests of the theory in every case of tetany.

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Diseases of the Skin and Uro-Genital System

Under the Charge of
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The Action of Arsenobenzol in Nerve Syphilis.—Drs. Sicard and Bloch have treated (*Societe Medicale des Hopitaux*, Dec. 30, 1911. *Paris Medical*, Jan. 7, 1911) a number of cases of nerve syphilis (hemiplegia, paraplegia, tabes, general paralysis) with injections of 606. They injected 0.4 to 0.5 grammes intravenously and followed this after a while with injections of 0.4 to 0.7 intramuscularly.

In cases of nerve syphilis of recent date and in young people some beneficial results could be shown, except two cases of general paralysis which did not improve, though the treatment was applied at an early date in the course of the disease.

All nerve cases of long duration have not improved.

Epidemic Imfantile Paralysis.—Dr. Sluss shows in (*Indianapolis Medical Journal*) a very interesting article the geographical distribution and spreading of epidemic infantile paralysis and arrives at conclusions which may prevent the further spreading, if proper action be taken on their basis.

Almost certainly Indiana will be confronted next summer with a well-defined epidemic of poliomyelitis. In order to reach this conclusion it is necessary only to study the history of the epidemics in our sister states and to note their mode and rate of progress across the country. It developed first in these states because they were most exposed to the contagion carried to this country by immigrants from Scandinavia and North Ge many, where for the past ten years the disease has been prevalent. From these various centers of infection in the United States the disease will spread at a rate geometrically increasing. The disease has already reached Indiana, but too late in the summer to become markedly epidemic. Cases have been reported, however, from twenty-seven counties in the State, with eleven deaths in the month of November. This demonstrates that the disease is already well established and awaits only the favoring condition of the summer season to grow and reach out in every direction. Local conditions may modify its severity, but it is not likely that a single community shall entirely escape.

Experience With Arsenobenzol.—Dr. Wm. S. Gottheil, (*Medical Record*, Dec. 31, 1910), whose opinion is of great value in the medical profession, gives his experience with the use of arsenobenzol in 38 cases, of which 25 were kept under observation long enough to get reliable results. The histories of these 25 cases are given. The author believes that arsenobenzol has undoubted efficacy in syphilis of various forms, especially in early cases with mucous lesions. Its immediate effect is better in some cases than that of mercury; in others it is slower and less certain, while it fails in still others. It must be used with care on account of the possibility of aggravating kidney lesions. In most cases treated it brought about kidney irritation shown by blood cells, albumin and casts in the urine. These patients showed none of these symptoms before the use of the drug. It should never be given in ambulant or office practice, and the patients should be kept in bed under observation for several days after the injection. It is indicated in malignant or severe cases, where mercury has failed, and in cases in which unusual antiluetic measures are necessary. While the symptoms recede after one or two doses one cannot yet say whether one gets a permanent cure. The author does not believe the drug to be superior to mercury in its action.

(Through the courtesy of the author I was given an opportunity to see the above cases in the City Hospital. Dr. E. W. D.)

Pruritus Vulvae During Pregnancy.—Dr. Rudaux, (*British Med. Journal*, Sept. 27, 1910), finds that pruritus is a common trouble among pregnant women, and that it is often so aggravated as to entail loss of rest and sleep, and to induce pronounced nervous irritability. In some cases the cause is without doubt the presence of more or less well marked discharge, but he has found sugar in the urine of all the pregnant women who have complained of discomfort and irritation of this part. He permits no ingestion of sugar or sweets and prescribes for them vichy water as a drink. A local application of hot water, with 10 gm. of chloral, is made four times a day, the parts being afterwards treated with an ointment of ichthyol 10 gm. and benzoin. A few days later a powder made up of zinc oxide, bismuth, and talc will be found useful. If there is any leucorrhea, a morning and evening douche containing 20 gm. of sodium borate is prescribed.

Phenol in Herpes, (Zoster).—Dr. G. P. Coopernail, (*Jour. Amer. Med. Assn.*, Dec. 3, p. 1998). For the past four years the writer has treated herpes with an application of a 95 per cent. solution of phenol. As soon as the skin begins to turn white he neutralizes the phenol effect with alcohol. In many cases one application suffices, and in no case is it necessary to make more than three. After one application of the 95 per cent. phenol he dresses the lesions with a simple ointment like zinc oxide. The pain, itching, and burning are quickly relieved. The vesicles shrivel and dry up leaving a crust. The writer first used phenol in herpes progenitalis with such satisfactory results that he was led to try it for herpes zoster, in which it gave equally good results. Looking over the literature of herpes I have not been able to find phenol mentioned in its treatment.

Salvarsan in Juvenile General Paralysis.—Dr. Abraham in (*London Lancet*). The writer feels that it is futile to administer 606 in juvenile general paralysis due to congenital syphilis. He sees in the early administration of mercury the best chance of preventing this condition and recommends that the drug be kept up over a long period.

Acute Infantile Eczema.—Dr. E. Cocks in, (*Medical Record*, 1911,) describes some practical features in connection with the treatment of infantile eczema. He calls attention to the futility of treatment in the presence of improper diet and insists that all such errors be corrected and as to the more specific instructions regarding treatment, he has the following to say: "Not one drop of water externally, but water in abundance internally. Sweet oil or rose water ointment, in gentle topical applications, suffices for the removal of the daily accumulations. If there is a pouring out of serum, a lotion of phenic acid m.xv., ichyol, ʒ1, zinc oxide ʒ11, magnesium carbonate ʒ11, and lime water ℥IV, should be applied with a piece of gauze or handkerchief if needed or until the oozing stops. In the presence of crust formation, especially on the face, a cap is made of unbleached muslin, with holes cut out for the eyes, mouth and nose, Then an ointment consisting of salicylic acid gr.iv.ichthyol m. xx, zinc oxide gr. xxx, and rose water ointment, II, is spread over the outside of the cap; the back of the cap is then placed against the child's face and the cap is turned inside out. The tape strings tied to each corner of the flap are now tied. The oozing promptly ceases, the pruritus is relieved and the patient sinks into a refreshing sleep.

Some Streptococcic Eruptions.—Dr. H. G. Adamson, (*St. Bartholomew's Hospital Journ.*, Nov., p. 18. *The Medical Review*, Feb., 1911, London). During the past 10 years it has been shown, that not only the common impetigo contagiosa is of streptococcic origin but that many other eruptions which were not even regarded as coccogenic, are streptococcic. While this was always generally known about erysipelas, for diagnosis and treatment this is of great importance. For streptococcic lesions are superficial and can at first be easily reached by antiseptics. The staphylococcus is material in producing boils and furnucles, pustular acne, folliculatisbarbae, multiple subcutaneous abscesses and the pustulation subsequent to friction with certain drugs. The so-called impetigo of Bockhart is a type of staphyloccic infection.

Streptoccocic lesions exude serum and not pus. The author gives a very short and reliable method of culturing the streptococcus and describes several conditions caused by it as impetigo contagioso, impetigo capitis or impeligimeus eczema subsequent to pedicusoris, ecthyma, impetigo of the bearded region, which if treated at first will yield readily. Bullous impetigo and pemphigous neonatorum. Ulcerations following streptoccocic blisters and the vacciniform ecthyma occurring in infants primarily due to the neglect of the mother in changing the diaper.

Warm bath and white precipitate ointment is the treatment for almost all these conditions in the beginning.

Infectious Diseases

Under the Charge of

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Typhoid in Infancy.—Dr. A. J. Bell, in an article on typhoid in infancy, (*The Ohio State Medical Journal*, Feb. 15, 1911), shows that up to a very recent time prominent writers regarded typhoid fever as exceedingly rare in an infant under two years of age. Some writers even declare that typhoid fever did not exist in infancy or childhood. Dr. Bell relates that Dr. Northrup was walking on the street in New York one day and heard that an infant had died of typhoid fever at the New York Foundling Asylum. Dr. Northrup was so astonished that he went immediately to the instilation where such an occurrence had not taken place in twenty years. There he found the staff discussing the case. He immediately challanged the diagnosis, and he would not consider the case typhoid unless bacilli were found and the word typhoid was scratched out.

Dr. Bell reports two cases of typhoid fever in infancy. He reaches the conclusion that typhoid fever under two years is uncommon (about 7.36 per cent.) and more uncommon under one year (about 0.46 per cent.)

The Presence of Hook Worm in Kentucky People.—Dr. Vernon Robins, of Louisville, Ky., in an interesting article published in the (*American Practitioner and News*, Feb., 1911), shows that of two hundred and eleven children examined for hook worm, seventeen per cent. distributed over fourteen counties showed hook worm. Clinical symptoms were entirely disregarded and the diagnosis was made by blood tests and test of feces. The examinations were made of children at one large institution to which they came from all over the state. There was no reason to believe that hook worm was present in the institution, but Dr. Robins determined to investigate the condition for hook worm. As a result of his investigation, Dr. Robins believes that before admitting children to an orphan asylum a search should be made for intestinal parasites, and that inmates who go home for a vacation should wear shoes constantly or be re-examined on their return.

Overcoming the anemia is of very great value in helping to eradicate tuberculosis and the cure of hook worm disease should materially lessen the prevalence of tuberculosis. Rr. Robins believes that a search should be made for hook worm carriers in every institution in which hook worm disease is found.

The Diagnosis of Nasal Diphtheria in the New Born and in Infants.—Dr. Louis Starr, quoting Dr. Blochmann (*The American Journal of the Medical Sciences*, Jan., 1911) claims that nasal diphtheria in infants, in a large percentage of cases is mistaken for "snuffles" or coryza. Dr. Blochmann claims that the nasal diphtheria is frequent in infancy, but that the diagnosis is not often made until the condition has advanced, diphtheretic otitis or complete occlusion of the nasal passage. A diagnosis should be made by direct examination without waiting for bacteriological examination. Direct nasal inspection is very important in the new born. It is important to diagnose the bacilli carriers from those ill with the disease. Dr. Blochmann reports five infants under one week old infected by an adult diphtheria bacilli carrier. Several epidemics are reported. In one epidemic affecting older children the condition was of chronic type, almost always without fever. The membrane lasted for several weeks in some cases. Only one child exhibited a rise of temperature. All of the cases recovered under antitoxic treatment.

Practical Points in the Management of Poliomyelitis and its Sequelae.—Henry Ling Taylor, New York, N. Y., (*Medical Record*, October 15, 1910), thinks that time is wasted in treating anterior poliomyelitis with massage and electricity. These agents have little effect. The prevention of deformities and their correction is of the utmost importance. But rest in bed should be maintained for a long time in order to prevent stretching of the affected muscles by the weight of the paralyzed limbs. Many cases of scoliosis in young adults have been traced to an early attack of poliomyelitis. The abdominal muscles are often affected and contribute to the scoliosis. It has been shown that an extensive small celled infiltration surrounds the vessels of the infected area; that the cord is edematous; that the motor cells atrophy secondarily; that the pia of the spine, bulb, and base of the brain is involved, even in cases showing no meningeal, bulbar, or cerebral symptoms. There are many quickly fatal cases as well as cases without paralysis. The author has notes of cases showing aphonia, dysphagia, ocular and facial paralysis and temporary paralysis of the bladder and rectum. Apathy and moderate stiffness of the head are common. Abdominal paralysis is quite common. As soon as the acute symptoms have subsided measures should be undertaken not to allow of stretching of the paralyzed muscles by the weight of the limbs. Support should be fitted. After deformity has taken place it is important to correct it by apparatus and operations. There is no advantage in excerising the opposing muscles, but quite the reverse. Improvement may be obtained even in cases of long standing by these measures, and a fair amount of motion obtained by careful balancing of the muscles.

A Diagnostic Sign of Scarlet Fever.—C. Pastia, (*La Tribune Medicale.* Nov. 12, p. 726). The writer describes a sign which he considers of value in the diagnosis of atypical cases of scarlet fever. It consists of a continuous linear eruption localized in the folds of flexion of the elbows. These lines are at first of a rose color, then become a deep red and usually assume an ecchymotic appearance. The eruption may take the form of a single line but is usually multiple, two to four lines being present and between them the ordinary eruption of scarlet fever may be observed. The sign appears at the beginning of the eruptive period and persists to its close and is then replaced by a linear pigmentation which is visible for some time. The presence of this linear eruption or the pigmentation which succeeds it, should give rise to the suspicion of scarlet fever, even when the eruption is scanty on other parts of the body or has already faded. A similar condition may occasionally occur about the axilla but is less marked and of short duration. This sign was found in 94 per cent. of the cases of scarlet fever in the wards of M. Grosovici, of Bucharest, as well as in a large number of cases in Paris, but was absent in measles and various other conditions simulating scarlet fever.

Diphtheria of the Vulva in a Child.—Capt. L. L. Smith, Medical Corps U. S. Army, (*New York Med. Journ.*, Jan. 7, p. 24). Diphtheria of the vulva and vagina is very rare. A few cases have been reported in the puerperium in which the diagnosis was confirmed by bacteriological examination. Williams reported one case in which the patient recovered under antitoxin ("*Review*," 1898, p. 73). A few cases of diphtheria of the vulva in children have been recorded. The disease is generally secondary to diphtheria of the throat, but it has been known to attack the vulva alone. The writer observed the following case.

A girl, aged three years, had slight cough and pyrexia. Nothing could be found in the throat or nose, and in a day or two she seemed to have completely recovered. A few days later attempts to micturate failed, and caused her to cry with pain. The meatus and labia minora were slightly inflamed and swollen. Some mucoid vaginal discharge was seen, but no membrane. Hot applications to the abdomen and vulva failed to induce micturition, so a catheter was passed. The urine was normal. An alkaline diuretic was given. and micturition became possible, but was very painful. The temperature was 100 degrees. Next day there was slight mucopurulent vaginal discharge, which was examined for the gonococcus with negative result. On the following day there was some exudate on the labia minora, but no well-defined membrane. The inguinal glands were slightly enlarged and tender. To determine the character of the infection a blood serum agar tube was inoculated, and sent to the curator of the Army Medical Museum, who reported that it showed an almost pure culture of the diphtheria bacillus. Eight thousand units of antitoxin were given, and within 24 hours the urinary symptoms began to subside, five thousand units were subsequently given, and in a day or two the urinary disturbance had disappeared. A slightly greyish white membrane separated from the labia minora and from part of the labia majora. Recovery followed.

When the infection was found to be due to diphtheria and before the antitoxin was administered, blood serum tubes were inoculated from the secretions of the nose and throat, and were found to be negative. There was no diphtheria in the vicinity, but a possible source of infection was as follows: A guest from a locality where there had been a number of cases of diphtheria had been visiting the family two days before the girl was taken ill. The guest had a bad "cold," but was not ill enough to require a physician. She used the bathroom in which the child was bathed daily. A towel used by her may have been used for the child, who may have been thus infected by a diphtheria carrier.

Infant Feeding in Health and Disease

Under the Charge of

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In a symposium on infant feeding published in Colorado Medicine Dr. W. T. Little, Canon City, Colo., says that irrespective of the method employed in the modification of milk for babies, two factors must be considered, viz. the milk and the infant.

To be able to give a clean milk the cows must be healthy, the milker should be clean, and the dairy should be kept clean, the milk should be delivered in sterile bottles that have been filled and capped at the dairy. Ordinary dairy milk contains from 25,000 to several million bacteria per c.c. when it reaches the consumer and soon spoils. Most milk commissions have fixed 10,000 bacteria per c.c. as the maximum and milk containing less than this is approved and sold as "certified milk."

The effect of various temperatures on the milk is stated by C. H. Stewart as follows: A temperature of 104 F. maintained for 30 minutes reduces the percentage of soluble albumins from 0.435 to 0.427 whereas a temperature of 176 F. maintained for 10 minutes entirely destroys it and also converts some of the sugar into caramel and changes the taste.

The ferments are also affected by high temperature and according to Hippius the fat spliting ferment is weakened by a temperature of 145 F. and destroyed by a temperature of 147 F. The oxidizing ferment is destroyed in one minute at 169 F. The proteolytic ferment is destroyed by boiling only. Tubercle bacilli are destroyed by a temperature of 140 F. maintained from 20 to 30 minutes. From the above facts we see that a temperature of 140 F. maintained for 30 minutes will kill most of the bacteria in milk without destroying the ferments nor causing pronounced chemical changes.

In considering the physiology of infant digestion the author explains the frequency of regurgitation, so common in infancy, by stating that the stomach maintains almost a vertical position; that the fundus, though distinctly formed, remains relatively flat thus offering little resistance to regurgitation of food.

Dr. Little then relates the findings of Clarke relative to the effect of some of the commonly used milk modifiers on the gastric digestion of infants. He says that (*a*) lime water does not reduce the acidity of the gastric contents, the neutralization of a portion of the acid being overcome by an increased stimulation of HCL. This may even increase the amount of acid available for digestion, (*b*) sodium citrate acts on the acid of the stomach converting it into sodium chloride, and thus markedly reduces the available HCL, (*c*) barley water seems to have no constant effect upon the chemistry of gastric digestion in the infant, (*d*) protein digestion in the infant's stomach is slight and is proportional to the amount of HCL in the organ.

The author says that for home modification the use of top milk is the most convenient, and reasonably accurate in results.

Dr. H. B. Whitney in the course of discussion says that all that one needs to remember in order to feed top milk to children is the percentage of fat contained in the various amounts of milk removed. If one will bear in mind that the upper 20 ounces contain about five per cent. fat, the upper 16 ounces six per cent., the upper 12 ounces nine per cent., the upper nine ounces 12 per cent., these four figures are about enough to feed satisfactorily with top milk. The plan of procedure is as follows: You first make up your mind how much proteid and how much fat you want to give. Suppose one decided to give a three per cent fat and one per cent. proteid. Reckoning the cow's milk contained about four per cent. proteid it is evident that the milk must be diluted four times. Having obtained a one per cent. proteid by diluting, and still wishing to obtain a three per cent. fat in the result one must start with a top milk containing 12 per cent. fat, which is the upper nine ounces. Dr. Whitney cites another example to illustrate his method. Suppose one wishes to give a two per cent. fat and a one per cent. proteid. Again the milk must be diluted four times. To obtain a two per cent fat take an eight per cent mixture, say the upper 14 ounces.

In the course of his paper Dr. Whitney emphasizes the fact that while the regular two or three hour interval of feeding has approved itself for most infants that there were occasional cases where it is best to feed only when hunger asserts itself, or at least to lengthen the interval, especially in cases of bottle-fed infants.

The author also recommends that when changing from one food to another that a good dose of oil be given, this to be followed by a restricted diet of barley water for 24 to 36 hours so as to increase the chance for the new food to agree. Too much stress cannot be laid upon the importance of gradually working up from the low values whenever there is doubt as to which particular element of the food has disagreed. Whey, containing as it does a minimal quantity of fat and a low value in proteid, is valuable as a diet to begin with. After a day or two later cream is added increasing the quantity as the infant requires it. It should not be forgotten that the whey must be heated to 155 degrees F. and then well cooled before the cream is added. Dr. Whitney believes that a rapid increase to the full caloric requirement of the child is the best course to pursue.

It is important to estimate the caloric value of every given formula. It has been demonstrated that the number of heat units per pound of weight demanded by an infant in the first year of life varies from 45 at birth, to 35 at the end of the year. The estimate of the units contained in any formula can easily be made from the following table:

One ounce of whole milk contains about 21 calories.
One ounce of skimmed milk contains about 10 calories.
One ounce of set cream contains about 54 calories.
One ounce of barley water contains about three calories.
One level teaspoonful of milk sugar contains about 35 calories.

By refering to the above table it is quite evident that a comparison may readily be made between the caloric requirement of an infant and the amount which any food supplies. There might be an apparent difficulty in the calculation of top milk, but it can be easily made by remembering that the top seven ounces of a quart bottle is cream and the remainder is skim milk.

Dr. Whitney goes on to say that owing to better knowledge of the effect of fat of cow's milk upon the infant's digestion are we able to manage difficult cases in artificial feeding. In former years the difficulties in infant digestion were attributed to the casein, but at the present time there is a tendency to minimize these difficulties and to magnify those of the digestion of fat. The name most prominently associated with this departure in infant feeding is that of Finkelstein, who claims that digestive disturbances of all sorts are generally due to perverted metabolism and the toxic effect of food elements rather than to bacterial infection. These toxic conditions are produced by the fats and the carbohydrates, while casein is almost easily assimilated and harmless.

Finkelstein divides nutritional disturbances in infants into four groups:

(1). Stage of disturbed balance or lessened tolerance in which the symptoms are irregular temperature tending to subnormal, stationary or decreased weight, and soapy stools containing in excess calcium and magnesium salts. This is due to the use of excessive fats, and may be cured by proper dietery restrictions. In many cases fats must be much reduced before a steady gain is again established. In contrast to the first stage, his second group:

(2). Dyspepsia is due to excessive carbodydrates in the diet. The temperature is high, vomiting, rapid loss of weight, stools are thin and watery with a few curds present. The condition clears up by proper dietery restrictions, but when the condition is not recognized may quickly pass into the stage of:

(3). Intoxication. In this stage all the symptoms of the second stage are present in a more intense form, with marked nervous symptoms and collapse. The treatment here is mainly dietary, but is beset with more difficulty than in the second stage. The fourth group:

(4). Decomposition is characterized by subnormal temperature, very rapid loss in weight, collapse without mental manifestations, stools are soapy or thin, according to causative error in the diet.

The syndrome may be caused by any single food element, especially the fats, and is the most serious form of nutritional disturbance in infants.

Dr. Whitney has for the past few years made quite a wide application of the principles of a fat-free diet, both in convalescence from acute digestive disturbances and especially in the feeding of difficult cases, with excellent results. He found that children who could not digest a fat-containing formula would digest two or even three per cent. proteid in the form of skimmed milk. In a case of moderate afebrile dyspepsia, he commences with a 25 per cent. skimmed milk and barley water and the usual amount of sugar—two level tablespoons to the pint of food. The percentage of skimmed milk is increased at intervals of two or three days to 30, 50 ,66, or even 75 per cent. according to the caloric demand. The scales must be the main criterion of success.

This method of feeding is not a panacea. It will often fail in cases of atrophy; and it is not appropriate for the normal healthy child, but in ordinary cases of infantile dyspepsia the use of skimmed milk with the subsequent gradual addition of cream when digestion and assimilation have considerably improved, is to be earnestly recommended.

Dr. F. G. Gengenbach of Denver, in discussion of the symposium, limited his remarks to the report by Alexander and Bullowa on colloidal solutions because of the fact that it tends to explain the wide difference of opinion between the American and the German pediatrists. The former holding the proteids at fault for infantile indigestion while the latter hold the fats at fault. Colloidal solutions are explained perhaps best in this way, where substances are in very fine state of subdivision, to the naked eye, they may seem to be in solution, but under an ordinary microscope we can see these fine particles. If this condition of subdivision is carried still finer and so fine that the particles are invisible under an ordinary microscope but are visible to the ultramicroscope, the substance is in colloidal solution. If the subdivision is carried still finer so that the particles cannot be observed even with the ultramicroscope the substance is in what is termed a crystalloidal solution. A substance may be a stable or reversible colloid, or an unstable or irreversible colloid. A stable colloid is one that is difficult to coagulate and if it is dessicated it may be re-dissovled. An unstable colloid has just the opposite qualities. The stable colloids have not only the power of protecting themselves but when present with unstable colloids have also the power to protect them to a certain extent. In milk the sugar and salts are in crystalloidal solution and the casein and lactalbumin are in colloidal solution. The casein represents the unstable colloid and the lactalbumin represents the stable colloid. The fat is probably in a state of suspension.

The lactalbumin (stable colloid), has the power to protect the casein, (unstable colloid). Therefore, if we have a milk with enough lactalbumin it is very difficult to coagulate it and when it does so, it coagulates in very small particles. In mother's milk we have about equal parts of casein and lactalbumin or according to some analyses, nearly twice as much lactalbumin as casein, while in cow's milk we have about six times as much casein as lactalbumin, so that it can readily be seen why cow's milk coagulates into large masses and is difficult of digestion, while mother's milk show the opposite characteristics.

Split Protein Feeding.—Dr. George F. Little in the (*American Journal of Obstetrics*) says that the difficulty of adopting the proteins of cow's milk to the human infant admits of no argument. The writer claims that he has found the apparent curds in the stools to be insoluble in either and are therefore indicative of their protein composition. Curds appearing in the stools give proof that the child is either getting more protein than it needs, or that while it needs what it is getting, the digestive organs are unable to handle the protein of cow's milk as it exists in the ordinary formula. The latter fact is a serious one as there can be no true growth unless enough proteid is assimilated.

The proteins of breast milk and those of cow's milk differ in many ways, but particularly in the proportion of the amount of casein and lactalbumin. The average of many analyses shows the proportions as follows:

Cow's Milk. . . . . . . .Casein: Lactalbumin: 14.3
Human Milk. . . . . . .Casein: Lactalbumin: 2.3

The writer gives a brief explanation of the basic idea of the method of feeding by split proteid saying in the main that when whey is made the casein is thrown down in the form of paracaesin, the soluble proteins remain, the fat is largely eliminated. If to this whey cream is added to bring up the fat, such cream naturally brings with it some casein and less lactalbumin, but the major part of the mixture being whey, an excess of soluble proteids over casein may be maintained, The proteids have been split and their ratio is changed to conform much more closely to human milk.

The method of preparation of this food as recommended by the writer is as follows:

Remove the upper five ounces of cream with a Chapin dipper, put it aside, from the milk remaining, make whey, by adding Fairchild's essence of pepsin in the proportion of one teaspoonful to the pint. The milk is warmed to blood heat, 100 degrees F., and kept at that temperature until the curd has formed (10 to 15 minutes). The curd is cut into small pieces and the mixture is heated, with vigorous stirring, to 155 degrees F.; strain the mixture while hot through a fine wire gauze coffee strainer, and when cold the cream or skimmed milk or both may be added.

The mixture must be brought up to 155 degrees F., to destroy the curdling ferment. If the temperature is above 155 degrees F., the albumin becomes coagulated. A further precaution is to see that the whey is thoroughly cooled before adding the cream.

The analyses of whey is as follows:

	Water	Fat	Sugar	Proteins	Ash
Barley		.3 to .4	4.9	.85 to .90	.5 to .6
Fleischman	93.15	.35	4.9	1.00	.6
Koenig	93.38	.32	4.79	.86	.6
Smetham	93.38	.24	5.06	.88	.49
Richmond			5.00	1.00	.6
Veith	93.01	.09	5.45	.92	.54
Monti		1.00		.85	.68
Van Slyke	93.00	.33	4.8	8.6	.7
Hutchinson	93.64	.29	4.65	.82	.65
Average of the above		.37	4.94	.90	.60

The addition of the cream brings with it nearly five times as much casein as lactalbumin. The excess of lactalbumin over the casein, such as exists in human milk will cease to be operative when the total proteins in the mixture reach about 1.5 per cent. Two per cent. or thereabouts will be attained by sacrificing lactalbumin, still with the advantage of being more digestible than the ordinary formula.

Two per cent proteid of breast milk will nourish an infant well towards the end of the first year, the same amount of cow's milk protein will not. The baby who is fed on cow's milk must gradually become used to the normal cow protein. Split protein feeding has therefore limits approximating the first half of the first year for healthy infants—but this is the most important period from the feeding point of view.

To employ the whey, cream and skim milk mixtures according to the recent method of the writer, the practitioner knowing how to make whey must remember two other things.

1. Average percentage composition of whey which is:

Fat	Caseinogen	Whey Proteins	Lactose
.50	0	.90	4.90

2. Rule, in a 20 ounce quantity of whey, the replacement of one ounce of whey by a one ounce of a 20 per cent. cream, will add one per cent. fat,

and 0.14 per cent. casein and will subtract .02 per cent. (actually .015 per cent.) from whey proteids.

The replacement of one ounce of whey by one ounce skim milk will similarly affect the casein and whey proteids, leaving the fat unchanged.

Skim milk is figured at .50 per cent. fat.

It is obvious that sugar being of about the same percentage in whey, cream, and skim milk it will be unchanged in these replacements, remaining at practically five per cent. this being too low for the infant. It is useful to remember in constructing any kind of a formula that a rounded tablespoonful of milk sugar weighs about one-half ounce and adds 1.5 per cent. to the quart of the mixture; two thirds will therefore bring any of our 20 ounce mixture to 6.5 per cent. sugar. If seven per cent. be desired a little less than a tablespoonful thirteen-fifteenths may be added.

Keeping the composition of whey in mind, one has only to mentally substitute enough cream to bring the fat to the desired percentage, then enough skim milk to bring the casein to the point of probable toleration figuring .14 added to casein .02 subtracted from whey proteins for each ounce of cream or skim milk substituted.

Early in the seventh month a shift may be made to the ordinary method of modification, with an undivided protein content of 1.75 per cent. this is increased to two per cent in a week or so, thence the feeding is carried on at the common rate of increase.

Diseases of the Alimentary System

Under the Charge of

JAMES WARREN VAN DERSLICE, M. D.

Assistant Professor of Pediatrics, Rush Medical College, Chicago, Ill.

Autò-Intoxication From the Alimentary Canal.—(*Journ. Ind. State Med. Soc.*, March 15, 1911). P. B. Carter states that in the intestinal canal putrefaction and fermentation are constant. He accepts Herter's classification. He recommends the stopping or greatest restriction of the proteids. He makes a point for the cleanliness of milk stating that the lower the bacterial count the better; insists upon free catharsis: considers calomel the best intestinal antiseptic and concludes with a summing up of the so-called intestinal antiseptics pointing out that they are all usually very disappointing.

Congenital Obliteration of the Bile-Ducts With Hepatic Cirrhosis.—(*Brit. Journ. Dis. of Children*, Jan., 1911). Weber and Dorner report a case coming under observation at four months of age well formed and not emaciated, but rather deeply jaundiced, showing considerable firm enlargement of both liver and spleen; the lower border of these organs being half way to umbilicus.

Examination of feces showed that at that time until death no bile entered the intestine, whereas the urine always contained bile pigment and gave Gmelin's reaction for bilirubin.

The history given was that the jaundice had been noticed soon after birth. At birth the child had a bullous eruption from which it recovered at two months. No evidence of syphilis was obtained in the parents. This was further confirmed by negative Wassermann.

In regard to diagnosis icterus neonatorum early clears up, whereas in the present case the jaundice gradually deepens. Infective jaundice may be distinguished by signs of infection. Pericellular hepatic jaundice of inherited syphilis is not usually accompanied by jaundice.

The gradual deepening of the jaundice, the enlargement of the liver and spleen and the definite clinical evidence that the jaundice is obstructive distinguish these cases.

Typhoid Fever in Infants.—(*Brit. Journ. Dis. of Chil.*, Jan., 1911).

Achard reports two cases in one of which the infection had been conveyed directly by the mother, who died of ataxo-dynamic typhoid, and in the other it had been conveyed indirectly by a nurse who looked after the child and typhoid cases at the same time. He says the mother suffering from typhoid may suckle their offspring provided they do not attend to the child in any other way. Typhoid fever in the infant being easily overlooked may be the cause of an epidemic.

Congenital Hypertrophic Stenosis of the Pylorus, with Special Reference to Its Treatment.—(*Practitioner*, Nov., 1910). Nicoll recognizes two degrees minor to be treated by diet, and major for which early operation alone is curative.

Diagnosis is based upon the symptom complex of persistent vomiting in the young infant who is obstinately constipated, who is ravenously hungry, who is ultimately extremely emaciated, and whose abdomen shows peristaltic waves passing over a stomach obviously dilated.

He reports five cases of the minor type treated by diet with successful termination. As to diet he says, my experience leads me to the belief that no rules of any value can be formulated. Often the best foods for one prove unavailing in another. Two convictions remain with me (1) that frequent changes are necessary. If a particular food does not stay down after a three days trial, it should be abandoned for another. (2) if after three weeks trial, even in cases seemingly of the minor type, vomiting still persists, dietetic treatment should be abandoned, and operation undertaken while strength remains for the ordeal. Vomiting which persists under systematic feeding for three weeks rarely yields to any form of food. The five patients mentioned were fed upon a very thin paste of milk and baked flour. The high reputation of dietetic treatment rests upon three fallacies, (1) erroneous diagnosis, (2) temporary improvement, (3) an exaggerated impression of the mortality attending operative treatment.

An exaggerated idea of the mortality rate of pyloric operations in infants seems slow to yield to the proof of facts. The mortality attending infants is no higher than that attending similar operations in the adult.

He emphasizes the need of a nurse who will mother the patient as well as care for the patient surgically.

Clinical Aspect of Intussusception.—(*Practitioner*, Nov., 1910). Adams has an exhaustive paper upon this subject. Under diagnosis he points out that the tumoris usually a cylindrical curve with its long axis horizontal which can be rolled vertical under the fingers, but its lateral mobility is distinctly limited. Probably the oftenest mistake is due to the presence of enlarged mesenteric glands. Children with tuberculous mesenteric glands may pass blood arising from tuberculous ulceration of the intestine. Hardening of the tumor under the examining hand occurs in true intussusception due to spastic contraction of the bowel; when present it is a most valuable sign.

Case of Congenital Occlusion of the Duodenum (Accompanying a Deficiency of the Hindgut), With a Note on the Etiology.—(*Glasgow Med. Journ.*, Aug., 1910). Gray reports a case, baby L., male, born 18th May, 1909, was one of twins. At birth the child, though small, was fairly well nourished, and during the first twenty-four hours nothing unusual was detected. After forty-eight hours, however, as there had been no movement of the bowels, and the child had persistently refused to take the breast, it was brought to the Rotunda Hospital, Dublin.

On examination the anus was well formed, but the canal terminated half an inch higher. The median line of the perineum was incised, and careful search made for the end of the hind-gut, but without result. During the next two days emaciation progressed rapidly, the skin and conjunctiva became tinged with a dull greyish-yellow, the child resisted all attempts at feeding, and what small quantities were swallowed were almost immediately returned unaltered. Death occurred early in the fifth day.

Strangulated Inguinal Hernia in an Infant Eight Weeks of Age.—Miller (in, *Post graduate*, March, 1911), Solomon C., eight weeks of age, was perfectly healthy, nursed well, slept well, and did not suffer from cramps. On June 18, 1910, the child became fretful and restless. The family physician who was called in that evening noticed a lump the size of an egg in the right groin. The child had vomited repeatedly, yellowish fluid. Several attempts to move the bowels brought no results. By request of the physician in charge I saw the infant the following day.

The little patient was markedly cyanosed. The abdomen was much distended, tense and tympanitic. He vomited a considerable quantity of yellowish fluid while I was in the house. In the right groin was found a firm strangulated inguinal hernia. Both testes were in the scrotum.

He was sent to the Jewish Hospital of Brooklyn, where I operated him under ether anesthesia, two hours after seeing him.

The hernial sac was thickened and contained omentum covering a diverticulum of small intestine. The gut which was somewhat discolored but with normal vitality was returned to the abdominal cavity. There was some free fluid in the hernial sac, and the gut above the obstruction caused by the acute angulation was distended. Part of the infiltrated omentum was removed and the opening closed in the Bassini fashion.

The child had a rapid convalescence and left the hospital one week after the operation.

The time of strangulation was about 28 hours.

In the report of 2000 operations for the cūre of hernia by Drs. Wm. T. Bull and Wm. B. Coley, (September 21, 1907), there were 17 strangulated hernias in children.

Unexplained Perforation of the Esophagus in a Girl Ten Years Old.—Miller, (*The Post Graduate*, March, 1911), reports a case in a child ten years of age. Family history, negative. Previous history, no similar attacks or anything relating to the present condition. She was perfectly well and attended school the day before her present illness, which began about ten hours before my arrival. She ate a light supper, consisting of tea, bread and butter. During the night the child was suddenly awakened from her sleep with nausea and pain in the upper part of the epigastrium. She vomited several times small quantities of greenish material. No blood. Her bowels moved once during that day, following a cathartic. Her condition at the time I saw her was one of profound shock, marked pallor, the pulse rapid, irregular, and at times imperceptible. Her respiration was rapid and stertorous, lips cyanotic, and semi-conciousness. The patient complained of pain in the epigastrium and upon palpation she was found to be exquisitely tender on the right upper half of the epigastrium. There was dullness and flatness in the right hypochondrium, and marked tympanitis on the left side and epigastric region. The doctor in attendance had given calomel in small doses. The stomach pump was not used. The history and general appearance of the patient, with the rapid and stertorous breathing suggested perforation near the cardiac end of the stomach which I ventured to diagnose. The patient was sent and admitted to the Jewish Hospital of Brooklyn within an hour.

There the following observations were made:

Temperature, 100 degrees F. Pulse, 118. Respiration, 32.

BOOK REVIEW

Webster's International Dictionary of the English Language. Thoroughly revised and much enlarged under the supervision of Noah Porter, D. D., LL. D., with a voluminous appendix to which is now added a supplement of twenty-five thousand words and phrases. W. T. Harris, Ph. D., LL. D., Editor-in-Chief. Handsome leather bindings, thumb-indexed. $12.00. G. & C. Merriam Company, Springfield, Mass., 1911.

It was with a feeling of pride that we examined this magnificent work, pride that it should have emanated from a distinguished American scholar, and that while the original edition made its impress, this volume the evolutionary product of that has been welcomed by the entire English speaking world, and is considered authority in all lexicographic matters by students and scholars everywhere.

No intellectual workshop has a complete armamentarium when there is absent from its shelves Webster's International Dictionary. We have a copy constantly at our elbow in the editorial office and another in the home for the family—in both places it holds sway as our only authority.

What Shall I Eat? A manuel of rational feeding, by Dr. F. X. Gouraud, formerly chief of the laboratory of the Medical Faculty of Paris. With a preface by Prof. Armand Gautier, of Paris. Only authorized translation into the English language, by Francis J. Rebman. With a glossary containing definitions of the principal technical terms, and an index of diseases referred to in the text. Price $1.50. New York, Rebman Company, 1123 Broadway.

The reviewer was favorably struck with the title of this little book, "What Shall I Eat?" Ever since Eve ate the apple, eating has been the burning question with both civilized and uncivilized man. Eating is a pastime every individual indulges in and enjoys, who has a sound stomach and a healthy liver and one who cannot eat and enjoy the good things of life, to him living is not worth the while. The striking feature of this book lies in its arrangement. The author gives for each article of food mentioned in the book the action on the digestive functions, on assimilation, secretion and elimination. His opinions of the question of alcohol, white bread and vegetarianism is interesting and worth studying, as they strike the keynote on the discussion of these important factors of modern diet.

The author, likewise gives the reason why a food should be employed or rejected, according to the normal or pathological conditions of each individual case. Indications and contraindictaions are given in every instance, which makes the choice of food adapted to each particular case or malady easy of selection.

This little book deserves a place on the five-foot shelf of every medical man—in fact of every thinking, intelligent person in the land, who takes an interest in the kitchen, and the proper choice of food for the table, and a rational care of the body. We predict for this book an extensive sale.

PEDIATRICS

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EDITORIAL

THYROID INSUFFICIENCY A POSSIBLE FACTOR IN RETARDED JUVENILE MENTAL DEVELOPMENT.

In this issue will be found three valuable papers. "The Moral Training of Mentally Deficient Children," by LeGrand Kerr, M.D. "Mental Hygiene in Childhood and Youth," by Paul V. Anderson, M. D. and "The Menace of the Feeble Minded," by H. H. Goddard, Ph. D. The number of mentally deficient children in our midst is really alarming. It is a question of great moment, especially to the pediatrist and to the general practitioner. The developmental defects of childhood give rise to retardation and deviation in mental, as well as in physical development, which fact, though well understood by the profession, receives but scant attention from the attending physician, and it is only of late years that the profession has really been awakened by the incomplete investigation of psychologists and educators, who have pointed out the necessity for co-operation in this large and important field.

Dr. E. B. McCready, medical director, Hospital School for backward children, of Pittsburg, Pa., writing on this subject in the Monthly Cyclopedia of Philadelphia, says it is the physician's duty to thoroughly familiarize himself with the factors involved in backward or deviate mental development, he thinks that a careful scientific study of the child should be made with a view to the prophylactic treatment, and when this is neglected, the physician is derelict in his duty and leaves unfulfilled a duty he owes humanity at large.

Many of the vexing problems which annoy the sociologist and educator of today may be made much easier if the family physician would do his whole duty, then juvenile delinquency, retarded mental development, lack of mental poise, all of which give rise, later in life to dependency, crime, insanity, drug and alcohol addictions may be recognized early and treated properly. Dr. McCready, in discussing this subject alludes to the researches made upon the functions of the internal secretions. Thanks to the labors of Dr. Sajous and other competent observers there is already a large mass of evidence in regard to the functions of the ductless glands from which valuable conclusions may be drawn pointing the way to more specific investigations.

The slight pigmentation of the skin in conjunction with lowered blood-pressure sometimes noted in incorrigible boys invites further investigation into the function of the adrenals. The fact, quoted by Sajous, that in 28 mentally weak and epileptic children examined by Bourneville the thymus was absent in 25, and that in another series of 292 cases it was absent in 74 per cent., is suggestive. Leonard Williams found that the administration of thyroid extract in enuresis occurring in children with symptoms which he attributes to thyroid insufficiency would not only cure the enuresis, but would cause a marked increase in height and weight at the same time,—though the writer has found several cases which thyroid extract failed to relieve, but which responded readily to thymus. The occurrence of osseous hypertrophy of varying degrees noticed in many children of subnormal mentality points to impairment of the functions of the hypophysis as a possible cause of both conditions.

Instances might be multiplied in which the retarded mental development would seem to be only a part of the symptom-complex of impaired perverted glandular secretion. A great deal can be done for the backward child by securing proper environmental influences and by education and training, but it is only through a careful and intelligent study of the pathological problems involved that a comprehensive understanding of the factors underlying retardation may be gained, and measures to be taken by prevention and treatment indicated.

GASTRO-ENTERITIS OF YOUNG CHILDREN.

Acute gastro-enteritis, inflammatory diarrhea, infective diarrhea and the other diarrheas of infants, that is to say those of a severe nature are perhaps, one and the same complaint, as a matter of fact Rurah in his recent small book on children's diseases puts the situation aptly when he says, in reference to researches undertaken at the Rockefeller Institute by Flexner and others, that there is no complete unanimity of opinion as to the infantile diarrheal diseases of children and consequently there are numerous classifications and no uniform nomenclature.

There may be severe symptoms with few or no lesions in the bowel or there may be extensive lesions. The disease may run a rapid course or a prolonged one. Toxic symptoms may be pronounced or lacking. The difference seems to depend on the virulence of the infection and the condition and resistance of the child. In the very acute cases the symptoms are chiefly of a toxic nature, from the absorption of the poisons produced by the bacteria in the bowels. There are practically always some pathologic lesions, usually of an inflammatory type. In the more prolonged cases they are liable to be more severe and may result in ulceration of the intestine.

The great English authority, Still, divides infantile diarrhea into three groups, (1) gastro-intestinal catarrh, (2) gastro-enteritis and ileocolitis and (3) cholera infantum. He, however, allows that the differences of these groups are chiefly differences of severity. Thus, the so-called cholera-infantum had nothing whatever to distinguish it from a very severe case of gastro- enteritis but in the colorless appearance of the stools. At present we have no proof than that this indicates more than an extreme degree of severity of the irritating product in the bowel.

Acute gastro-enteritis may be defined with sufficient accuracy as an acute infectious disease occurring most frequently in hot weather. It has been said, and there is little reason to doubt the statement, that all the cases of this disease and almost all the deaths therefrom occur in artifically fed infants, naturally so, from the maleficent conditions of life. The complaint is most common among the poor in overcrowded districts. It is likewise most frequent among children under two years of age.

As to the bacteriology of this disease, the bacteria found seem to vary to a considerable extent. In some cases the bacillus enteritidis sporogenes described by Dr. Klein may be the cause. The Bacillus dysentericus.

(1). Shiga-Flexner bacillus has been found in the stools of those affected but only in a small minority of cases. The London Lancet, Sept. 3, 1910, has a paper by Drs. Williams, Murray and Rundle, all of Liverpool, relating the outcome of researches made by them into the bacteriology of epidemic summer diarrhea in 1907, these investigators discovered an organism in the heart blood of a case dying from epidemic diarrhea. They were able to allocate this organism to the region of the group Paratyphoid B. which they named bacillus F. Further researches confirmed the results of previous years and demonstrated the fact that the organisms were neither bacillus typhosus nor bacillus paratyphoid A. but are intimately related to the paratyphoid B. group.

The conclusions reached by Williams and his coadjutors were as follows: They have isolated from the feces, heart blood and scrapings of abdominal organs of cases of epidemic diarrhea two groups of organisms producing diarrhea in puppies, the one group apparently new and corresponding exactly with our original stain. Bacillus F. and the other identical with bacillus suipestifer.

(2). These groups are distinguished from each other from paratyphoid B. and from bacillus suipestifer by absorption test alone. (3). They were not present in the stools of 100 normal children.

Dr. F. A. Bainbridge of the Lister Institute, London, read a paper at the last meeting of the British Medical Association in which he thought he had traced the outbreak of epidemic diarrhea to the bacillus paratyphosus.

It may be said that the majority of cases of infantile diarrhea, especially in the summer months are due to a micro-organism. Still says that in most cases the outset is more or less sudden; the infant begins to vomit, passes a few loose, perhaps green and slimy stools, and then the stools become watery, often of a dark brownish color and very offensive. According to Rurah the onset may be gradual with but little fever and symptoms of intestinal indigestion, or it may be sudden with high fever. In the severe forms, there may be delirium, convulsions and coma.

There is vomiting frequently continuous and of everything the child swallows. In the stools there may be blood or pus. The loss of weight is great—and the child becomes weak, pale and a few days may so change its appearance that it is unrecognizable. As to the temperature, Still states that even if it is raised for the first few days it soon becomes normal and if the diarrhea is prolonged a sub-normal temperature is common. At the onset correct diagnosis is impossible that is, to be able to state with certanity whether the disease is merely indigestion or will develop into a severe type. Prognosis is also difficult and depends greatly on the child's environment, care and treatment.

Of course, in order to effectually check the ravages of epidemic diarrhea prevention must be the watch-word. The majority of cases might be prevented if the laws of health and nature were attended to. The most frequent cause of the disease is artificial feeding and Still says of all the artificial foods condensed milk is the most deadly. However, as with the strictest preventive measures there will be a certain amount of epidemic diarrhea, the treatment of this must be considered. This is largely a matter of diet. In the acute stages first and foremost comes the prohibition of all milk. Still recommends, albumen-water, barley water or rice water, weak veal or chicken broth, while the Germans use freshly infused weak tea. When vomiting is troublesome, plain cold boiled water is ordered. When vomiting is severe, wash out the stomach with equal parts of lime and cinnamon water. Water in teaspoonfuls are useful to stop vomiting. If the fluids are rejected and collapse threatens, give several ounces of normal salt solution under the skin and an occasional strychnin subcutaneously. Hot mustard baths of a temperature of 100 to 105 degrees F. are valuable in cases of threatened collapse and alcohol is of undeniable value in the early stages. As for drugs, Still says that there are very few cases in which opium is not of benefit. Rurah says, never use opium until the bowel has been thoroughly cleansed. In the early stages, when vomiting is present calomel is indicated, if no vomiting, castor oil should be given. It should be borne in mind that castor oil, when used in doses not exceeding five minimes has no apparent action but has a powerful effect in checking diarrhea. Antiseptic treatment is not much favored by physicians and astringents are of little use in acute stages but to be recommended in chronic cases.

THE EVIL EFFECTS OF TOO MUCH EDUCATION WITH THE YOUNG.

Complaints are at times made in this country that the health, and particularly the eyesight of children, is permanently injured by a too close application to the desk. However, the lot of children at school here is a light and easy one, when compared to that of their juvenile fellow-students in Germany. There, indeed, if report does not speak falsely, the brain work that quite a young child is expected to get through in a day is sufficient to cause much alarm. In Germany many subjects are taught in the schools which in other countries are included in the university course. German parents are now awakening to the dangers of this cramming system, and are becoming day by day more nervous as to the ultimate result on the physique and stamina of the rising generation. Professor Eulenburg some time ago, in the Deutsche Medicinische Wochenschrift, criticizes the hours of work of a celebrated Berlin "gymnasium," where the sixth class has in the week thirty-three lessons. Dr. Eulenberg points out that according to Griesbach the brain of an over taxed child requires several hours of rest before regaining its normal faculties; and Burgerstein says that boys of twelve years of age require as a rule an interval of several minutes after forty minutes devotion to study. Although there is no country in the world where the young are subjected to such brain pressure in the schools as Germany, yet the trend of modern education both here and in England, points the same way. The worst feature of the case is that young children are not only compelled to learn an enormous quantity of subjects, but also so many useless ones. Elementary schools should teach nothing but elementary subjects. It certainly seems that the results of modern education are in no way commensurate with the trouble and expense incurred.

THE HEALTHFULNESS OF CRYING FOR INFANTS.

A "good cry" is an expression often made use of, and at first sight it seems decidedly misapplied, but upon a little consideration it will be allowed that after all in many instances it is not an inappropriate term. Of course crying is usually associated in one's mind with grief or pain, although even when such is the case crying is a relief and thus does good. There are many occasions, however, when crying, and violent crying, is of the most decided benefit to children. In reference to this the Hospital says: "In children a great change takes place during crying in the manner in which the respiration is carried on. Expirations are prolonged sometimes for as much as half a minute, and are interrupted by short inspirations. During expiration, the glottis is contracted so that intrapulmonary pressure rises considerably, and there can be but little doubt that it is the equal distribution of this increased air pressure throughout the whole of the chest leading to dilation of portions of the lung that have become more or less collapsed, that is the explanation of the great benefit which often results from crying, in cases of infantile bronchitis, and of the large discharge of bronchial mucus which so often follows. Children may become very blue during the paroxysm, but the deep respirations, which succeed quickly, restore the circulation to a better condition than before in consequence of the large lung space available. It might be added, that in cases of empyema, too, when pus has collected, that if a child when being operated on cries, it is a great help towards getting rid of the purulent matter.

RENAL COLIC IN INFANTS.

That renal colic does occur in infants is more than likely, although there is not universal agreement on the point owing to the difficulty in diagnosing between renal and intestinal colic. Many cases have been recorded where all the symptoms of renal colic were present. It is true that no distinct calculus has been found, on the other hand abundance of free uric acid has been detected on analysis of the urine, and it is the opinion of several whose experience should entitle their views to consideration that this disease is much more common with infants than is generally believed to be the case. The affection is seldom met with among the children of the poor, but it is almost wholly confined to the offspring of the rich. The conditions of life under which each class lives must be held responsible for this phenomenon.

The poor man has not the same opportunity of contracting gout himself, nor the likelihood of inheriting a gouty diathesis that the rich man has. It is one of the peculiar privileges of the moneyed man to be more prone to the formation of uric acid and to suffer from that state designated gout.

PEDIATRICS

ORIGINAL ARTICLES

THRUSH.

BY

EUSTACE SMITH, M. D.

Fellow of the Royal College of Physicians; Physician to His Majesty, the King of the Belgians; Physician to the East London Children's Hospital; Consulting Physician to the Victoria Park Hospital for Diseases of the Chest, London, England.

Thrush is a parasitic disorder, and is due to a fungus which attaches itself to the mucous membrane of the mouth and gullet. The complaint is of importance, not so much in itself—for when it appears in a healthy child the vegetation is readily dispersed—as on account of the debility and serious intestinal and other derangements by which it is often accompanied. Strictly speaking, thrush is a symptom rather than a disease, and often indicates a condition of the system which should give rise to most serious apprehensions.

Causation.—Thrush is a cryptogamic growth, which finds its nidus in altered secretion from the mucous membrane. It is most common in infants during the first few weeks or months of life, and any derangement which involves the mucous lining of the mouth may tend to its production. In such subjects, the vegetation is the expression of a local state, and this local state may itself be the consequence of a cachectic condition or constitutional disease. The development of the fungus is favored by heat and weather, want of cleanliness and indigestible food. It is consequently very common during the summer months amongst hand-fed infants, especially among those who are supplied with a highly fermentable diet, and are allowed to suck their food from dirty bottles. In such cases, the passage through the mouth of sour fluid, and the derangement of the stomach which results from fermentation and acidity, maintain a state of constant oral catarrh which forms a congenial medium for the development of the parasite. In a severe form the complaint is never seen except in badly nourished infants whose food is ill-selected, and whose general management leaves much to be desired. Imperfect ventilation and general unsanitary surroundings are no doubt agencies which further the invasion of the fungus and assist its growth. New-born infants crowded together in foundling hospitals often suffer greatly from such influences, and in these institutions thrush is a common and much dreaded visitor. Even after the first infancy, the later stage of many acute and chronic forms of disease is liable to be complicated by the presence of the parasite, for in the young child a catarrhal condition of the alimentary mucous membrane often forms a necessary part of such illness.

In children suckled at the breast, the parasite is rarely seen; and if, on account of some temporary derangement, it succeeds in establishing itself upon the mucous membrane, it is readily dislodged by suitable treatment, and quickly made to disappear. Thrush does not seem to be contagious in the ordinary sense of the term. No doubt, if the mycelium be purposely brought into contact with the mucous membrane of a child who is in a favorable condition for its reception, the plant may flourish in its new situation; but in a child whose mucous membrane is in a healthy state, the experiment will be tried in vain.

Morbid Anatomy.—The parasitic growth which constitutes thrush, consists of a mycelium and spores of a cryptogammic vegetation which was first described by Robin under the name of oidium albicans. The fungus has now been identified by Haller as identical with the oidium lactis which results from the acid fermentation of milk. The mucous membrane of the mouth is first seen to be red, and its secretion has a distinctly acid reaction. Then, in the course of a few hours, little white points appear upon the reddened surface, especially on the cheeks and the inner surface of the lips. These increase in number and in size, and by the second day are seen to have united into patches which cover a considerable extent of the surface. Even before the appearance of the white points, a gentle scraping of the mucous membrane reveals to the miscroscope many spores of the fungus. These are elongated cells—egg-shaped bodies—which are often attached to one another by their ends, so as to form groups of two, three, or four. The white points are found, on examination, to consist of these connected spores, combined with scaly epithelium from the mucous membrane, detached spores and molecular deposit.

The white, newly-formed membrane coats the interior of the mouth and gullet; but is usually confined to parts covered with scaly epithelium, for it avoids the nasal passage and seldom penetrates into the larynx. Parrot, however, states that he has seen evidence of its presence on the vocal cords. The advance of the membrane down the alimentary canal was for a long time supposed to be arrested at the cardiac end of the stomach; but Parrot asserts that the fungus is occasionally to be discovered in the stomach and bowels. He examined sections of the gastric mucous membrane, and found the more superficial portions of the glands to be destroyed by the parasitic vegetation which had penetrated into their interior, and had also advanced, although to a less extent, into the intervening tissues. According to Wagner, the spores and filaments can be sometimes detected within the blood vessels of the part.

In the intestines Parrot states that he has succeeded in discovering the fungus only in rare cases. In each instance its seat was the caecum. Whether the growth has the power of attaching itself to the anus, is not clear, for an examination of the whitish pultaceous matter sometimes found at the orifice of the rectum, revealed merely pavement epithelium in stratified layers, with some doubtful cells which presented a certain analogy with the filaments of thrush. On the mucous membrane of the mouth, the thrush membrane is at first white and firmly adherent. After a few days its color becomes browner, and its connection with the mucous surface less intimate, so that it can be readily wiped away with a brush or piece of wet rag.

In all cases of death from the serious intestinal derangement or the constitutional cachexia of which thrush is a chief local expression, extreme atrophy of the tissues is a striking phenomenon. The infants are usually in a state of profound malnutrition, and present, according to Parrot, fatty degeneration of the kidneys, the lungs, and the brain, sometimes ulceration of the stomach, and, not infrequently, hemorrhages within the cranial cavity.

Symptoms.—In cases where the parasitic growth attaches itself to the mucous membrane of a sturdy infant, the appearance of the white points is preceded by redness and soreness of the mouth, and a rise of temperature. The child is noticed to suck with difficulty, and, if hand-fed, may refuse the bottle. He seldom, however, declines the breast for this reason. Often he makes movements with his lips, cries if a finger is introduced into his mouth, and is evidently uneasy. His temperature often rises at night to 103 or 104. At the same time there may be a little looseness of the bowels, preceded by colicky pains. The motions are slimy or green, but not very offensive. Often they are acrid, and cause some redness and excoriation of the nates. This is looked upon by nurses as a satisfactory symptom, being considered to indicate that the thrush "has gone through" the child. In many cases there is derangement of the stomach and vomiting.

The above constitutes the whole of the symptoms. Although the temperature is raised, the stools have an innocent appearance, and the face expresses no distress. In the mouth, the thrush is limited to a few white patches, looking like particles of curd adhering to the mucous membrane. They are seen on the inner sides of the cheeks and lips, on the tongue, sometimes on the hard palate, but seldom, in these cases, at the back of the throat. They may be removed with a little trouble, and leave the mucous surface on which they had been seated raw looking and bright red. When thus removed, similar little patches quickly appear in their place, but after a few days the surface cleans, and the child is well.

This simple variety is the shape the complaint assumes in ordinary cases, and practitioners whose experience is collected entirely from families in easy circumstances may have observed it in no other form. In hospitals and asylums where infants are admitted it is seen as a much more serious complaint. In babies who have been neglected or fed injudiciously, and confined to dirty ill-ventilated, foul-smelling rooms—poor miserable little objects, who have sunk from these causes and the consequent bowel derangement into a state of extreme atrophy and weakness, the whole of the interior of the mouth and fauces is often completely lined by the white thrush membrane. The layer adheres closely to the mucous membrane, and can only be detached with great difficulty. If this be done, the mucous surface beneath is seen to be raw, and sometimes ulcerated. An infant so affected cannot suck, and indeed, often can hardly swallow. His mouth is dry; his lips are red and dry-looking, and at the surface where they come into contact, white scattered particles of thrush can be perceived, even when the lips are almost closed. The child's eyes and cheeks are sunken; his face is pale and haggard, and marked with a well-defined nasal line which becomes a deep furrow on any movement of the lips. The buttocks and genitals are often covered with an erythematous or eczematous redness, and ulcerations may be noticed on the internal malleoli, and sometimes also on other bony projections. His skin is loose and excessively inelastic, often lying in lax folds upon the belly. The child whimpers feebly, but never cries. His mouth has a sour or even a cadaverous smell. The motions, more or less profuse, are equally offensive. He gets weaker and weaker, and gradually sinks out of life. Sometimes the condition known as "spurious hydrocephalus" is noticed before death. The temperature varies. Sometimes, on the first appearance of the parasite, the internal temperature is found to be 101, or higher, although the extremities feel cold; but after a time the temperature falls below the level of health, and may be only 96 or 97 in the rectum. In many of these cases, the secretion of urine is diminished. According to Parrot, it often contains albumen, and this pathologist was disposed to attribute the cerebral phenomena which are apt to occur in these cases to toxic causes, from retention in the blood of urinary elements.

In this severe form the general symptoms depend upon the intestinal catarrh, or other primary lesions, whatever it may be, which has reduced the infant's strength and prepared the way for the invasion of the parasite. Often the illness ends in a profuse diarrhea, but the bowels are not invariably relaxed. In some cases an attack of catarrhal pneumonia, or pulmonary catarrh with collapse of the lung, may bring the life of the infant prematurely to a close.

Diagnosis.—Thrush is not difficult to detect. We have merely to examine the mouth of the infant and observe the white adherent patches sprinkled over the surface of the mucous membrane. If a particle of one of these patches be detached and placed under the microscope, the characteristic spores and filaments will at once be noticed.

It is possible, that, in the rare cases where diphtheritic false membrane is seen on the interior of the lips and mouth, it may be mistaken for thrush, but diphtheritic membrane is thicker, tougher and more leathery in texture, less white in color and under the microscope shows the Klebs-Loffler organism. Moreover, the superficial cervical glands are enlarged and tender in diphtheria. In cases of thrush they are not affected.

Particles of curd clinging to the gums and cheeks of a child who has just taken his bottle have exactly the appearance of disseminated particles of thrush; but they can be readily wiped off with a small brush or feather, and on their disappearance leave no redness of the mucous membrane behind.

Prognosis.—In cases of thrush, the probabilities of the child's recovery depend partly upon his general condition, partly upon the extent of surface covered by the vegetation. If thrush appear in the mouth of a sturdy, well-nourished child, as a consequence of some temporary derangement, the symptoms is one of little consequence, and the parasite can be readily dispersed. In a child, enfeebled and wasted by chronic digestive derangement, or the victim of inherited syphilis, the appearance of thrush in the mouth is a symptom of the utmost gravity. In such a case, the child's only chance of recovery depends upon the rapid introduction of nourishment into his system; but a deranged condition of the mucous membrane may neutralize all our efforts to improve the state of his nutrition. In an infant so reduced the rapidity with which the fungus is seen to spread over the surface, may be taken as a measure of the severity of the digestive derangement. If it rapidly cover the whole interior of the mouth and throat, the child's chances of recovery in his weak state are small indeed.

Treatment.—In mild cases of thrush, our first care should be to remedy the temporary gastric derangement which has allowed the parasitic growth to effect a lodgement on the mucous membrane. The diet must be modified consisting principally of nutritious, easily digested food, and if the bowels are relaxed, the looseness must be arrested by suitable treatment. If not relaxed, they should be acted on by a dose of rhubarb, with a grain of grey powder. Afterwards, a draught containing a few grains of carbonate of soda, with an aromatic should be given three or four times a day. If there is nausea, the stomach should be cleared out by a teaspoonful of ipecacuanha wine, or by a minute dose of apomorphia: gr. 1-60-1-30;, administered hypodermically. A valuable medicine in these cases is a mixture of glycerine, carbolic acid and tincture of iodine, half a drop to a drop of each, given every four hours in a teaspoonful of water sweetened with glycerine. The influence of this remedy in clearing quickly away even an extensive coating of thrush is often surprising.

Fresh air is of extreme importance. If the weather is suitable, the child should pass much of the day out of doors; and especial care should be taken that his sleeping chamber is sufficiently ventilated, and that soiled linen is not allowed to remain in the room.

With regard to local treatment; perfect cleanliness is indispensable. Directly the infant has taken the bottle, his mouth should be swabbed out with a piece of soft linen rag, or a large camel's-hair brush, moistened with warm water. Afterwards, the whole of the interior of the mouth should be brushed over with glycerine of borax. If this treatment be repeated after each meal, it will not be long before all signs of the fungus have disappeared.

In the more severe examples of the complaint the same local treatment must be employed. If the fungus be suspected to have passed into the gullet, the child may be forced to swallow a few drops of the wash diluted with water. If superficial ulceration be seen, ten grains of sulphate of zinc may be added to each ounce of the wash, for use as an application to the mucous membrane. In the worst cases, where the parasitic coating is widely spread, the deposit must be removed by painting it with three or four grains of papain mixed with glycerine, and then treating the uncovered surface with a solution of resorcin (five to twenty grains to the ounce of normal saline). The chief difficulty in these cases is to improve the child's nutrition and increase his strength. If the patients are in a position to supply a wet nurse, this method of feeding should be adopted at once. If the child is forced to trust to the bottle, ass's milk is preferable to that of the cow. It should be thickened with barley water. White wine whey is a valuable resource in these cases, and if the infant be much reduced in flesh and strength, with small digestive power, he may subsist upon it entirely for the first few days. A dessertspoonful of fresh cream shaken up with each bottleful of the whey, makes it more nutritious, and is a very digestible addition to the meal. In all cases, the internal treatment will depend upon the accompanying conditions, and especially upon the nature of the illness in the course of which the local complaint has appeared. Often the child is the subject of chronic intestinal catarrh. This must be treated as directed elsewhere (see diarrhea). If the purging is moderate, and there is no reason to suspect the presence of ulceration of the bowels, much benefit may often be derived from a powder containing one grain of rhubarb, with one grain of powdered bark, and three grains of aromatic chalk, given two or three times in the day.

Fresh air, with warmth to the belly, and the most perfect cleanliness, not only to the child's body and linen, but also of all spoons, cups, feeding bottles, etc., used in his nursery, are essential to his recovery.

THE MORAL TRAINING OF MENTALLY DEFICIENT CHILDREN.*

BY

LE GRAND KERR, M. D.

Visiting Pediatrist to the Methodist Episcopal (Seney), the Bushwick, the Williamsburg and the Swedish Hospitals in Brooklyn, N. Y.; Consulting Pediatrist to the Rockaway Beach Hospital; the Industrial Home for Children, the E. N. Y. Dispensary, etc.

To borrow the phrase used by one the best French writers, the treatment of the mentally deficient child is essentially medico-pedagogic.

Thus the parent of such a child has placed him upon the responsibility of placing the child where the physician, the teacher and the nurse can co-operate and co-ordinate their efforts.

But we might with reason ask; "Does this measure up to the full responsibility?" The writer is convinced that the problem is a broader one than the institution of medical examination and care, educational training, industrial training and the provision of recreation.

These latter have received such close study and have been established upon such a firm basis that the brilliant results which they have produced have lead to increased activities along these lines, with a partial disregard for other factors which may prove to be quite as important. Is it wise however to disregard the factors that at first may seem to be minor because their importance is for the time being at least overshadowed by the almost dramatic success which has attended the institution of educational training in particular?

There is a greater need for moral training of the mentally deficient child than of his normal brother. Let me make it as emphatic as possible that this is not so because the mental defective is morally worse than his normal brother, although this seems often to be the common view. But his condition makes him much more susceptable to suggestion and imitation and therefore his possible evil surroundings are much more apt to bring about unfavorable results. It is an unfortunate fact that we must always face, that when disease, a congenital defect, an acquired deficiency, or iniquituous environment weaken the inhibitory control, the baser motives are certain to sooner or later assert themselves. It is even commonly observed that with good surroundings, the baser motives may become accentuated.

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*Read before the Pediatric Section of the Medical Society of the County of Kings, April 26, 1911.

We may be certain that with the inhibitory control defective and the influence of imitation always strongly at work, that the result must be disasterous to the morals of the child unless there is instituted some intelligent and judicious control. There *must* be moral training as well as physical and mental, for mere physical strength unguided, rapidly becomes brutal in its tendencies.

And it is just as important with these children to have good moral influences always active as it is to merely withhold those which are bad. As a matter of general principle in moral training, it is always better to lay the emphasis upon that which is right rather than upon that which is wrong. Positive virtues are the better. If a child is taught that it has within itself the ability to do what is right and this is so emphasized that the child finally becomes fully conscious of it, it will eventually strengthen the child's will to do the right and thus help in the formation of character.

We thus see that the choice of a teacher is not merely a consideration of the ability to impart knowledge of a specific kind but carries with it a consideration of what may be in time for the child of supreme importance;—moral qualifications and the ability to impress them upon the child.

In a question of moral discipline, there is one attitude that must always be assumed;—the mentally deficient child must be lead and not compelled in the sense that the latter word is most commonly used.

If a display of force is used, the child may be compelled to give a semblance of obedience but he does so from a baser motive and through the influence of fear and therefore he is made cowardly. This finally results in secretiveness and the child becomes more or less retiring, without much spirit and therefore less amenable to subsequent training and moral development.

These children above all others need sympathy and love coupled with firmness, so that they may trust themselves to the one who has them in charge. It is surprising sometimes to observe how acute the mentally deficient child is in finding out to whom he must render obedience. And having found this out, if the obedience is the result of a confidence which has been won through gentle methods, the child is immediately amenable to moral training and support.

And right here, we might speak of the great danger of dual control, or of single control without co-operation upon the part of others who may of necessity be in contact with the child. This is an important matter particularly when the child is to be kept at home and a stranger is introduced into the household to accept the responsibility of the training of the child. In fairness to the child there should be one who is in supreme command at all times and perfect co-operation should be the keynote of the attitude of all others.

The institution of some scheme of modified rewards and punishments is most effective in the moral training of this type of child.

While the modification must be such as is suited to the individual needs, it is the general principles of reward and punishment that require the real modification. There is a considerable difference between a possible reward for well-doing and the purchase of obedience. And this distinction must be clearly made or otherwise undesirable traits will be developed. Just as soon as you begin to appeal to a child through its baser motives, these are developed and it is inevitable that a continued appeal to these and a neglect of the higher ones, will result in the predominance of the former and they will become the prominent feature in the individual's character. Buying obedience is a habit which is easily acquired but is always harmful in its results.

It is not uncommon to find the child becoming more and more perverted, so that even in the more common acts of obedience, he looks for the price. A reward given *after* the act of obedience is *completed* is a far different matter. In the deficient child with its enlarged capacity for sympathy, commendation is often the best reward that can be offered to it. The child looks for it; it is a strong factor in gaining and holding the confidence of the child and therefore its neglect is disastrous in its effect upon the child. No class of children need love and sympathy so greatly as these; none have their capacity for it developed to such an extent;—to deny what they most need and what they have large capacity for, is cruel, for it costs but little to give and its withholding may mean the stifling of the moral growth in a child who needs it most to round out its life.

Punishment must usually be by harmless deprivation applied in such a gentle manner that the child is only made conscious of the fact that he has done wrong. Punishment may be regarded from two standpoints; first, as a penalty demanded by the principles of justice, and, secondly, as a measure which will deter the individual from a repetition of the offense which brought the punishment about, or through him as an example act in like manner upon others. In the deficient child, there are no demands made by justice, nor can we reasonably use the child as an example for normal children. Therefore, punishment for the deficient child is merely for its own good and to awaken a consciousness that wrong has been done. When it is carried on beyond this point, it cannot do otherwise than prove harmful. Personally, I do not feel that corporal punishment has the place that has been usually accorded it in dealing with this class of children. It is rarely if ever, a method which is at all beneficial in its results and in most instances defeats the very object aimed at in its infliction. As regards its effect upon the moral training it brings into play and excites the baneful feelings of anger, fear and of bitter resentment against the one who inflicts it. The child quite naturally thinks that this sort of punishment is out of all proportion to the offense and is an outlet for the anger of the one having it in charge. And with all his deficiencies, he is often right in this regard.

However, the fact that the child has a mental infirmity should not be allowed to interfere with such training as shall teach him to have a regard for others and the mere fact that he is deficient need not make him irresponsive to control and therefore overriding.

There are defects which affect certain distinct areas of the brain and occasionally we find a child who may be very clever mentally but with a moral incapacity which is out of all proportion to the other factors.

Commonly the emotions of such a child are developed relatively more than the intellectual qualities which should normally control them and therefore the child is of the unrestrained emotional type. These are the hardest cases to train morally.

Lack of moral consciousness can only be determined after a most exhaustive examination and a complete study of all the facts relating to the particular child. It must also be proven to the examiner that all of the acts under consideration are persistent and unprovoked, or arise under the slightest provocation and that through proper methods the child cannot be brought to a realizing sense of the nature and quality of his acts. Too much stress should not be placed upon the intellectual qualities of the child as an indicator of his capacity for moral consciousness, because there is not always an intellectual deficiency. In fact the most dangerous cases both to themselves and to society are those who have the combination of an acute intellect with a blunted moral sense. In justice to the child it is necessary that the examination be one that is exhaustive and extending over a considerable period, so that no one factor may be missed.

It remains for me in closing to speak briefly of those transient moral abberations which occur at or during the time of puberty, in children with a neurotic inheritance and whose unstable mental equilibrium is for the time being placed under an unusual strain by pubesence. These are the cases which receive very little attention or consideration because they are commonly misunderstood and are so difficult of differentiation. Thus a child that exhibits a certain propensity toward moral abberations which may not in themselves be very bad, is accused of moral deliquency and in many instances made worse because he is not understood. These cases yield easily to proper control and do not persist after the period of pubesence has fairly past.

While some of the cases show an improvement in intelligence with a corresponding decrease in the moral sense, a careful examination commonly reveals the fact that the efforts toward moral training have been improper or inadequate. More rarely however, the disproportion between intellectual strength and moral weakness continues and progresses, so that the intellect is marshalled under the banner of evil doing and restraint becomes absolutely necessary.

To educate such a child adds materially to its power for evil and the only reasonable course open to us is to provide for their maintainance in some institution in which they can be segregrated with others of their own class, but not with other children who are merely deficient.

We must not be unmindful of the fact that no matter how brilliant are the results which follow any system of training for the deficient child whether it be educational, manual or moral, there can never be a disregard for constant and continued after-care. These methods while they are often very gratifying in their immediate results are not wholly permanent unless the proper supervision is maintained over a long period;—in fact, it must embrace the whole period of the child's life.

42 Gates Avenue.

THE CESSATION OF PETIT MAL THROUGH THE REMOVAL OF ADENOIDS.

BY

GEORGE DOW SCOTT, M. D.

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I wanted my title to read "cure" rather than "cessation;" it is best, however, to be on the safe side and await puberty. In my own experience many cases of epilepsy (petit mal) have as their causative factor, adenoids. I herewith report two cases, one of Dr. St. Clair Thomson, of London, England, and one of my own. Dr. Thomson's patient had been treated for a long time by a neurologist without any beneficial results.

A child of six years; attacks for four years. Two attacks in the physician's study within twenty minutes. The head was thrown back, the eye balls turned upwards, the upper eyelids twitched. Inspiration was shallow and noisy and this condition lasted for a few seconds, as also unconsciousness without falling. A history of repeated colds and of mouth breathing with a tendency to become deaf. The child was restless in bed, she talked in her sleep and constantly threw off the bed clothes. A physical inspection of the child showed a mouth breather, the root of the nose broad. The nostrils were normal in calibre but the mucous membrane was dry and flaky. The palate arched, and the membrana tympani very translucent and slightly retracted.

After the operation the attacks ceased and had not recurred six years after. The patient is now bright and intelligent, her hearing perfect and the arch of the palate widened.

Owing to a very intelligent mother I can report my own case very fully.

A. E., born June 15th, 1908, nursed until the 11th month, then fed on zweiback, with a mixture of milk and water. Her mother has suffered from petit mal, according to her statement for twenty years, bromides being used to control her attacks. The last attack was one year ago. (Dr. Joseph A. Kenefick believes that adenoids may have been the original causative factor.) At four months the child had two teeth. August, 1909, one year later she had sixteen teeth. That summer she had been well except for great restlessness at night attributed to the breaking through of these teeth, and after the "cutting" she felt better. On November the 3rd following the child had a severe vomiting attack attributed by the physician to a deranged stomach, the vomitus looking like curdled blood of a dark cocoa color. After a few days of illness, she became apparently well. On December 3rd, between two and four o'clock in the morning the child had an "inward convulsion" following which she vomited freely. The attending physician again considered the digestion impaired. She quickly improved. On January 3rd, the child suffered from a high fever after an indisposition lasting for a few days, a yellow discharge immediately appearing through a ruptured right membrana tympani. On January 24th, 25th and 26th, she began vomiting, the left membrana tympani rupturing followed by a yellow discharge. Both ears were now discharging. Adenoids were then given as the cause. The child never became absolutely well but continued at times better then worse. On May 29th, she had a convulsion lasting about one-half hour, the condition being attributed at the time to the stomach and to the teeth, four new teeth having appeared, making now twenty teeth in toto. Hard cerumen was seen in the right aural canal. On June 1st there appeared another convulsion followed by still another at a fifteen minute interval, but soon an attack followed the preceding one so closely that the child would not wholly recover from one before entering upon another. These series of attacks lasted for four hours. One convulsion alone the mother asserts, lasted one and a half hours. More teeth about to break through were seen, the gums appearing angry, glossy and stretched. On June 11th another convulsion occurred lasting about one-half hour. On June 29th the mother first noticed that the face twitched, also the eyelids and the lips and saliva ran from the mouth. She passed her urine involuntarily and profusely during the night and succeeding a convulsion. She never fell to the floor during an attack.

I first saw the child on July 6th, 1910, a large beefy-jowled child, well developed and fairly strong. Attention imperfect, hearing appeared normal. A moderate amount of gas was elicited in the large and small intestines resulting from improper food and from constipation. The tonsils were slightly acutely swollen. Heart, lungs, spleen, liver, normal; puffy face, sluggish eye, saddle shaped nose; no enlargement or tenderness of anterior cervical glands; no fever; great discomfort in breathing, no nasal discharge. On the oro-pharynx were seen the enlarged follicles so closely associated with adenoids. Placing the child on its back, its head slightly raised on a pillow, with the thumb and first finger of my left hand I held the right and left cheeks firmly between the teeth and with the first finger of my right hand tried to reach the epi-pharynx. My finger was halted by a thick fibrinous mass of lymphoid tissue completely filling up the naso-pharynx. Removal of this mass was advised, with the understanding that sleep, breathing and the appetite would be improved.

I could promise her nothing definite as to the cessation of the epileptic attacks. On July 27th, just before operating I had a good chance to observe a convulsion. An attack seized her as she was walking across the room to the mother. She stopped short, the eyes became fixed, the eyelids and lips twitched the tongue protruded slightly at the left angle of the mouth. She drewled moderately the saliva dripping from the left angle of the mouth. She stopped short in the midst of a sentence. Finally in about one-half minite the twitching became less, the eyes moved, the breathing then shallow became full and deep, the tongue drawn in and the child finished its sentence and walked to the mother.

In operating under ether, I used a Gottstein curette. Normal salt solution nasal douches were advised t. i. d. at 100 degrees Fahrenheit.

Following the operation the child had innumerable convulsions for eleven days and then these suddenly ceased. None have occurred since (May 20, 1911). Constipation with an acute attack of catarrhal jaundice has been the only after condition.

111 W. 77th, N. Y.

MEDICAL INSPECTION OF SCHOOL CHILDREN.*

BY
L. ROSA H. GANTT, M. D.
Spartanburg, S. C.

Mr. President and Members of the South Carolina Medical Association:

Following the report of Dr. Hines of the work at Seneca last year, the Spartanburg County Medical Society offered the trustees of the Spartanburg City Schools to undertake the experimental examination of the children for the term 1910–1911, without cost. Upon the acceptance of this offer by the trustees the society appointed Drs. A. R. Fike, J. H. Allen and the speaker a committee to do this work.

The committee limited the scope of its work, (1) to the detection of parasitic, infectious and contagious diseases; (2) to the exclusion from school of all children affected with acute contagious diseases; (3) the inspection of each school child for the purpose of determining the existence of physical defects and non-contagious infection and the advising of presence of same; (4) inspection of the hygienic and sanitary condition of the school buildings and premises.

A complete record of the findings of the inspectors was made in each case on printed blanks. These consisted of three blanks, (1) a history card kept by the examiner, (2) a record card kept by the school authorities, (3) a notification card sent to the parent. A copy of these blanks is shown in a recent bulletin published by the State Board of Health on the subject of Medical Inspection in Schools. In case of contagious disease discovered, the matter was speedily reported to the school authorities, in other cases a card was sent to the parent stating the defect that was interfering with school work, and suggesting that the condition be called to the attention of the family physician. There was of course no treatment attempted by the inspectors or the school authorities. The only exception to this statement is that in cases of pediculosis a printed slip of directions for treatment accompanied the notification card. One of the teachers applied this treatment to several cases of pediculosis in her room, after the parents had persistently disregarded the official notices. The excitement created, and the communications received by this lady will doubtless make one of the most interesting chapters in her school life.

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*Read before the South Carolina Medical Association, by permission of the Editor of the Journal of the South Carolina Medical Association.

In the examination of the throat, a small wooden spatula furnished by the school authorities was used to depress the tongue, a separate one for each examination. The inspectors devoted two hours each school day to this work, and working in pairs were able to examine about fifteen children an hour.

I have here the detailed report of the result of this examination, but shall not ask you to listen to the reading of these figures; however I shall ask,—to use a Congressional expression—"the privilege of extending my remarks in the Record," and print this for the benefit of the profession.

WHITE	1st Grade	2nd Grade	3rd Grade	4th Grade	5th Grade	6th Grade	7th Grade	8th Grade	9th Grade	10th Grade	Total	Percentage
Number Examined	500	285	296	245	265	104	108	72	34	15	1891	
Total Defects	248	144	271	214	175	159	78	63	22	10	1375	
Total Defective	145	92	153	131	104	85	48	39	17	8	822	42%
With one Defect	75	51	70	62	55	38	24	19	13	6	417	
With two Defects	47	33	53	56	30	33	17	16	3	2	296	
With three Defects	15	6	26	12	16	11	6	4	1	0	97	
With four Defects	6	1	3	1	3	2	2	0	0	0	15	
With five Defects	2	1	1	0	0	1	0	0	0	0	5	
Adenoids	12	2	5	1	2	0	1	0	1	0	22	2%
Tonsils	50	42	51	42	31	14	8	4	7	0	247	21%
Vision	20	25	72	69	56	50	24	28	5	5	348	29%
Hearing	35	18	37	26	24	24	6	5	2	0	152	13%
Eyelids	27	13	13	14	9	17	6	7	2	2	120	10%
Teeth	27	17	46	32	43	26	21	12	3	3	225	19%
Skin	10	6	19	12	10	3	5	1	1	0	66	5%
Anemia	10	3	6	3	11	9	7	6	0	0	57	5%
Nasal	3	3	2	0	0	1	0	1	0	0	10	9%
Pediculosis	39	9	12	11	5	4	0	0	1	0	80	6%
Glands	5	2	1	0	1	0	0	0	0	0	9	
Other Defects	7	4	3	3	2	1	0	0	0	0	20	
Percentage of Defects	29	32	52	53	40	81	44	54	40	53	42.55%	

COLORED	1st Grade	2nd Grade	3rd Grade	4th Grade	5th grade	6th Grade	7th Grade	8th Grade	Total	Percentage
Number Examined	243	89	109	94	34	28	28	9	678	
Total Defects	167	114	84	69	41	25	27	17	544	56%
Total Defectives	116	70	60	43	25	18	14	9	355	56%
With one Defect	74	38	42	27	12	11	5	6	215	
With two Defects	36	22	11	11	11	7	5	4	106	
With three Defects	4	8	6	4	1	0	4	1	28	
With four Defects	1	2	1	2	1	0	0	0	7	
With five Defects	1	0	0	0	0	0	0	0	1	
Adenoids	4	1	1	1	0	0	0	0	7	
Tonsils	58	31	22	18	10	5	2	2	147	41%
Vision	21	24	6	11	7	1	9	7	86	24%
Hearing	17	15	12	8	6	6	2	0	67	19%
Eye Lids	2	3	4	4	2	1	1	0	16	4%
Teeth	26	17	23	13	7	7	9	6	107	30%
Skin	20	9	9	5	5	3	9	0	50	14%
Anemia	10	6	3	4	3	1	2	1	29	8%
Nasal Defects										
Pediculosis	0	7	4	0	0	0	0	0	11	11%
Enlarged Glands	6	1	0	3	2	0	1	1	13	
Other Defects	4	0	3	2	9	1	1	0	11	
Per cent. Defective	47.7	78	55	45	73	64	50	100		56%

A summary of this report shows that there were examined 2567 children, 1891 were white and 676 were colored.

Six hundred and thirty-two children were found to be suffering from a single defect, 402 had two defects, 125 had three defects, 22 children had four defects, and six children had as many as five defects, making a total of 1919 defects distributed among 1177 children. Eight hundred and twenty-two of the defective children were white and 355 were colored.

The aggregate shows 46 per cent. of the children examined to be defective. The percentage among the whites being 42.5 per cent., while among the colored pupils the percentage of defectives was 56 per cent.

I would not have these statistics create the impression that 46 per cent of the public school children of Spartanburg are candidates for the hospital, or are lame, halt and blind,—for the examination showed them to be a lot of healthy average children. The larger proportion were suffering from errors of refraction, bad teeth or enlarged tonsils, and while these defects are vital to the physical welfare of the child, they are not of themselves grave, for they can be easily remedied.

The more serious conditions were those of cardiac trouble, pellagra, spinal disease, bone disease, deficient mentality and amblyopia, and I am glad to report that only a small number, about one per cent., of those examined were found to be suffering from these troubles.

The percentage of defectives compared most favorably with the results obtained in other sections of the country. In New York City the percentage of defectives ranges from 66 per cent. to 84 per cent. in the regular schools, and in special schools for backward children as high as 90 to 95 per cent.

To attempt to draw accurate scientific conclusions from our work might lead to error, for the examination covered too short a period. As this is the first city where the result of the examination of white and negro children was noted and recorded separately it might be worth while to call attention to a few salient facts brought out by the separate record.

The first fact to be noted is that physical defects are far more prevalent among the negro children, 56 per cent. as against 42 and 5-10 for the whites.

Contrary to the general belief that few negroes have throat troubles, 41 per cent. of them have hypertrophied tonsils, while there were only 21 per cent. among the white children. Enlarged glands are far more common in the negro children. This inspection exploded the popular belief that negroes have better teeth than white people, for 30 per cent of the negro children showed defective teeth and only 19 per cent of the white children had such defects. I can only account for the fallacy of this belief that negroes have good teeth by my observation that the negroes' teeth stand out in startling whiteness on account of their black skin, for but a very small percentage of them use a tooth brush. The result of the examination supported the popular belief that negroes have fewer eye troubles and fewer nasal defects, for the percentage in both of these was lower than among the whites.

We were impressed with the few cases of adenoids among the children of both races and also with the limited area of prevalence of parasitic diseases, for instance the majority of cases of pediculosis was confined to one grade in one of the white schools and of scabies in one grade in the negro school.

In the negro schools not a single case of almost total blindness in one eye was found, while a number, six in one grade alone, were found in the white schools.

The great number of cases of hypertrophied tonsils in the lower grades, and the few cases among the children in the higher grades makes me believe that we are a little too radical in removing tonsils, and that if left alone, many of them will return to normal size as the child reaches adolescence, without having injured the child.

Of the many children examined a surprisingly large number was found who had never used a tooth brush; one small boy when asked if he had a tooth brush answered that he did not, but he knew his brother would lend him his, another answered that he used to have one but his mother ruined it by polishing her shoes with it, and still another said, "My Paw says little chaps like me and Tom don't need no tooth brushes."

The inspection showed that there is a close relation between the physical condition and the morals, character, studiousness, and the best attributes of childhood. In discussing with Prof. Frank Evans, Superintendent of the Spartanburg Schools, the condition of a certain school, which showed the worst physical condition of the pupils, he said: "The moral condition of this school is likewise the worst, it is the school that gives me the most trouble." This carries out the observation of Judge Estelle, of the Omaha Juvenile Court, made at a recent meeting of The American Institute of Criminal Law and Criminology, who said: "In my judgment 60 per cent. of the cases of truancy which lead up often to delinquencies are brought about more by physical than by mental difficulties."

The most distressing feature of our work has been the failure of the parents generally to respond to the notices sent them by the Board of Examiners. A notice calling attention to a defect which in childhood would respond to treatment, but destined, if allowed to remain untreated, to dwarf the mental and physical development, would be received as information, or serve to make the parent a victim of the patent medicine vendor, the quack, or the traveling optician. I have in mind the case of a child suffering with trachoma,—the report was made to the school authorities and the danger of the disease fully explained to the parent and the child excluded from school. The father's energy was expended against the exclusion of his child, but he made no effort to procure medical aid for his offspring.

The teachers report that the notification cards brought forth notes like these.—"Dear Miss Jones: The doctors say that Mary cannot hear well, please move her seat close to you." or, "Dear Miss Smith: Annie's eyes are bad, please put her nearer the blackboard." "Dear Professor: Please have the doctor examine Lily again, I am sure they made a mislook, for she haven't got any of them little animals in her head,"—the said Lily being a black lily.

I am satisfied that the school nurse is a necessary adjunct to successful inspection, and to meet this condition of parental ignorance and neglect, her duties should be to visit the parents of children excluded for minor ailments and see that the child is properly treated so that it can speedily return to school.

Without the co-operation of the nurse, the child excluded, say for scabies or pediculosis receives no attention and is allowed to run the streets—a source of infection to others. A tactful, experienced woman, by visits to the homes of the children, could act as adviser to the parents, lessen the friction between them and the school authorities and aid in the good to be accomplished by this work.

The need of medical inspection was fully shown by the work of our committee, for numerous cases were noted where the defects were quite serious, but had passed unnoticed by parent or teacher, and of which the child itself was ignorant. In several of the children who were brought to me for treatment the physical condition of some was found so bad that I deemed it advisable to have the children stopped from school temporarily, yet these had not been observed by the parents.

Aside from the duty to prevent the spread of infectious and contagious diseases in schools—when the State takes your child into its custody to teach it, this duty is due you and the child—the State should use the knowledge of the medical profession to aid the teacher in obtaining the best results from her labor.

Spartanburg was one of the 128 cities in the United States which had the advantage during the past year of medical inspection. The many inquiries which have come to the board and school authorities from cities in this and adjoining States, show that they are seriously considering its adoption, and we can look forward to the time when compulsory medical inspection will become a part of the public school system.

MENTAL HYGIENE IN CHILDHOOD AND YOUTH.*

BY

PAUL V. ANDERSON, M. D.

Morganton, N. C.

Medicine accomplishes its highest aim only when it gives us the means of preventing disease, and the science of preventive medicine, in its infancy thirty or forty years ago, today bids fair even to outstrip curative medicine. The work done with yellow fever, plague, malaria, tuberculosis and uncinariasis has marked a new era in medicine. Osler, in a recent article entitled "Man's Redemption of Man," says, "We have touched only the fringe of the subject." So what may we not hope for the future?

The work done, however, has been chiefly for the prevention of bodily diseases, for the greatest development of the physical machine and for the stamping out of those diseases which destroy life, but little or nothing has been done for the prevention of those diseases which may "maim and incapacitate" and which, at times, make life horribly burdensome, if not unbearable, i. e., mental and nervous disorders.

Great advances are now being made in school hygiene. Many schools are being established for children who have a tendency toward tuberculosis and much good is being done. Medical inspection of schools is becoming more common and is carried out more systematically. Children are being carefully examined for adenoids, defective teeth, defective sight and hearing and, indeed, for every defect. Very properly, the development of the physical machine is being emphasized first, but the teaching of the adequate control and guiding of that machine is being neglected. In order that the best results may be obtained, physical and mental hygiene must be co-equal, and it is just as important for the physician to be able to detect symptoms of mental abnormality and advise concerning their treatment as it is for him to be able to detect physical abnormalities and advise what shall be done for their correction. If the physician can only recognize the premonitory symptoms of an early mental breakdown and if he can instruct the parent and the teacher how to manage children who are on the threshold of a mental collapse, I am sure that many could be saved to usefulness who otherwise would be blighted by insanity, and that many a father and mother could be spared the agony of seeing their child mentally dead, though bodily alive.

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*Read before the Sixth District State Medical Society, April 20, 1911.

The purpose of this paper, then, is to point out what, in my opinion, seem to be the chief factors of mental hygiene in the young.

From time immemorial the democratic idea has held in our schools that all children have equal mental attainments. This never has been true and never will be true. In the first place, it has been estimated that one per cent. or more of all school children are idiots or imbeciles. These idiots and imbeciles should be segregated as early as possible, not only because association with them is detrimental to normal children, but because they are dangerous, especially at the time of puberty. At this time, "idiots animalize, imbeciles become violent, egoistic, coarse and vulgar, and the weak minds grow unsettled in their moral feelings and are without resistance to sensations that now erupt within them." The males often become the violators of women and children; the females frequently become prostitutes, disseminating the vilest of venereal diseases, not only crippling the youth of our land and impairing their usefulness, but maiming for life innocent women and unborn children.

Another class is that of the retarded or backward boys and girls—the repeaters in our schools. Dr. Witmer says of retardation that, "any child, the functions of whose brain are not developed up to the normal limit for his age, is suffering from retardation. Any youth who arrives at the age of maturity with his brain below the level of functional development which it might have attained if other methods had been employed will carry through life a permanent arrest of mental and moral development." In fifty-five of the leading cities of the United States the average percentage of repeaters is 15.4, according to Ayres, of the Russell Sage Foundation for the Study of Backward Children, and the cost of these repeaters is fourteen per cent. of the cost of the whole school system. The loss from the same cause in the United States has been estimated at $57,000,000.00 to $80,000,000.00. In such a number of repeaters there must of necessity be a great many defective children, and such a number of failures in a community is a loss to that community which cannot be estimated in dollars and cents.

Chief among the causes of retardation are defective sight and hearing, adenoids, rapid physical growth, acute illnesses, the beginning of puberty and unhappy home environment. Again, some children naturally develop more slowly than others and often have to repeat a grade one or more times, but later either by their own initiative, having found themselves, so to speak, or having become interested by some skilful teacher, arouse from their lethargy and not only overtake their fellows but often outstrip them. Patrick Henry is said to have been such a boy. Goldsmith's teacher said that he was the dullest boy she had ever taught. Webster was considered a dullard and Darwin was thought to be "a very ordinary boy and below the common standard in intellect." Of course, the defect in many backward children is permanent, but scientific pedagogy and medicine should give these children every opportunity before they are condemned. A careful physical examination should be made to find out any possible defects which would cause backwardness; then mental tests should be given to ascertain whether the defect is permanent or whether it can be overcome by proper teaching. If this plan is carried out, perhaps many can be saved—if not from a mental breakdown leading to a precocious dementia—at least from a crippling which compels them to take only a small part in life's battles.

In the study of our cases of dementia praecox in the State Hospital in Morganton, North Carolina, during the past five years, we have been especially impressed by the fact that as children many of these young people were not defective, but rather peculiar; different from other children, and did not have "healthy mental habits." Some were exceedingly bright, while others were dull and could not keep pace with their fellows. A few of the latter, however, possessed great inventive genius and marked mechanical skill. Many were diffident, shy, seclusive, sensitive, conscientious to a fault and excessively religious. They had no chums with whom they could share their joys and sorrows, avoided the rough school games, and spent much time in reading, especially the Bible, and were dreamers. Thus, living within themselves, in a world of dreams and good resolutions, separated from the real, they became satisfied "to substitute for an efficient way of meeting difficulties, a superficial moralizing and self-deception." So fixed did their abnormal habits become that at last a life of action became impossible and under some strain which would have meant nothing to a normal individual they broke down mentally. Dr. Adolph

Meyer says that dementia praecox is a deterioration of habits and especially a deterioration of the instincts of action. This is well said, for these individuals are dreamers and not doers, being satisfied with dreaming.

A few histories of cases of dementia praecox will illustrate the points I wish to make.

The first case occurs in a school girl of twenty. She went to the high school from the cotton mill in which she had worked from the time she was fourteen years old. She tried to work her way through school while taking the regular course, and, in addition to that, a course in stenography. To quote her: "I took up more than I could stand." She soon became timid; seclusive; despondent; doubted her ability to do things; thought she would be lost, and worried over trifles. Her engagement was broken off about this time. The combination of the overwork in school and the breaking off of her engagement resulted in her mental breakdown.

The second case occurs in a girl who has always been nervous; was scared of the dark; easily excited over trifles. When her teacher would speak to her unexpectedly, she would jump. She has had marked emotional instability all her life and cried or laughed excessively at the slightest provocation. She has always been sensitive and more or less suspicious. To quote the patient: "I started to school in September, 1907. I studied my books all the time, and all the students knew that the teacher gave us lessons which were too long. He would knock his fist against the board when you missed your spelling. He treated us like beasts and made several of us nervous, but the rest were not as bad as I. After a while I thought about my books all the time, night and day, and I couldn't sleep at all some nights. I couldn't get some of the examples in mathematics and I cried like a baby." The patient states further: "Thinking about my examination got me worse. I thought I would fail and it would have been the first time I had ever failed. Finally I had to quit; I couldn't study two months before Christmas. I begged the children to help me before I quit and I told them I was so nervous I couldn't think. Teacher was hard on me. Some people haven't got a bit of feeling! I gave up at last and cried most of the time." The patient rapidly grew worse; began to think that her relatives and friends were against her and persecuted her. She had marked hallucinations of sight and hearing; also marked hysterical seizures. She attempted to kill herself by taking lye. She became so much disturbed that it was necessary to commit her in February, 1908. This case might have been saved had the early symptoms of mental breakdown been recognized and had she been taken from school.

S. J., learned well at school, but was always nervous and different from the other children in the family. She has had marked hysterical seizures ever since her first menstrual period which occurred when she was eleven years old. Two years ago she worked in a telephone office. She soon got so, however, that she could not remember, her books became mixed up, and she had to go home for a while to rest. After resting at home for a few weeks she became much better and returned to the office and tried to straighten out the books. She soon became badly upset again, however, thought that she was going to be lost; preached and prayed and was hard to control. Finally she had to be committed to the hospital.

L. J., was brought up on a farm, but worked irregularly. He states that at school he could not get his lessons as well as the other children; was worried so much by the effort to prepare his lessons that he became discouraged and quit school. Quoting him: "I am easily bothered and worried and I am slow to think and slow to learn and easily forget things. When somebody is mad at me I cannot keep it out of my mind." Later he became markedly hypochrondriacal; suffered with many imaginary ailments, and worried greatly over these. He was quite a mechanical genius and invented a mail box which was patented and for which he had several offers, but he did not accept them and nothing came of his patent. He worried much over this; in fact, he said, "I studied about this patent so much that, at times, I was right drunk." At times, too, he would have violent outbreaks of temper. Occasionally he would go away from home to work, but couldn't stick to any work for any length of time. These abnormal tendencies, uncontrolled, finally brought about a mental breakdown.

Another case occurs in a boy twenty years old whose maternal aunt was insane. He was always quiet; sober-minded; of good habits; was exceedingly bright in high school and entered college at seventeen. He failed to pass several of his first examinations at college, however, and did even worse with his final examinations; complained during the year of his eyes, but examination showed no ocular trouble; said he couldn't concentrate his mind and did not feel well. He did not return to college the next year, but the following fall entered another college with his brother; remained only a short time and returned home suddenly, realizing that he was unable to do mental work. Soon he became badly upset and was committed to the hospital. He is now silly, simple, and rather markedly demented. Apparrently the insanity had been developing for three years, as manifested by his inability to concentrate his thoughts; his indefinite feelings of discomfort, and his imaginary eye trouble. If these premonitory signs of mental breakdown had been recognized, and had the boy been taken out of school and given proper rest and care, the resulting insanity might have been averted.

A grave responsibility rests upon the family physician in his relation to childhood. He, as no other, knows the history of the child's forebears—whether there is a bad mental heredity or not. He also knows the physical and mental characteristics of the child. Frequently, thus armed,—if he possess that most valuable of all gifts to the physician, tact—he can, by properly safe-guarding the child, prevent the most terrible of disasters, a mental breakdown. It is of especial importance that children of nervous parents and of those with a bad mental heredity should have this over-sight of the physician. On the other hand, any child who shows a falling off in his school work should be examined by the physician and, if possible, the cause of the trouble should be ascertained. As before stated, adenoids, defective sight and hearing are much more frequent causes of backwardness than is generally recognized. The life of many a child has been made a burden by these defects which could so easily have been removed, and they have stumbled along, mortified and disheartened daily, a burden to their teachers and a sorrow to their parents. Many of these children, as soon as physical handicaps have been removed, can easily take their proper place with their fellows.

Again, if the child is easily fatigued; is nervous; seclusive; irritable; or over-sensitive; takes no interest in his studies or in the ordinary pursuits of boyhood, he should be carefully watched, for these are the symptoms which often lead to precocious dementia. It is best, at times, even to take him from school and try to interest him in manual work. If the proper supervision is given, farm work is best. A short mental rest may restore the boy. If this fails, however, he should not be forced through school and college, but his family should be satisfied if he can become a wage earner with his hands. I am firmly convinced that many a boy has been ruined by pushing him through school or college who could have been saved had the early signs of a mental breakdown been recognized. Of course, all do not become insane who have shown the early symptoms mentioned, but so many of our cases of dementia praecox have shown these premonitory symptoms that I believe their appearance should be heeded and their danger recognized.

Puberty is an especially dangerous period in the life of the child. He is born again, and, as Dr. Stanly Hall so well says of this period, "This last great wave of growth throws the child upon the shores of manhood and womanhood relatively helpless as from his second birth—rejuvinated, as if every cell in his body had striven to revive for the last time its reproductive potency." This new life is a puzzle and the child has difficulty in finding himself. He dreams dreams, sees visions, is moody and introspective. He is taciturn, self-sufficient and restraints are set aside, the good and the bad contending for the mastery in him. This instability, occurring as it does, coincidentally with the school life, is dangerous and the combined demands on the physical and mental strength are frequently so great that a mental breakdown occurs. The margin between sanity and insanity in all children at this period is perilously small. Children who are normal pass the crisis in safety without help, but the mentally unstable succumb, especially if a helping hand is not extended, and end their days in an insane hospital; or, if they do not do this, they become so crippled mentally that they are able to take only a small part in the world's affairs. The physician in conjunction with the parent can be of inestimable service to the child at this time. The sexual question should be explained and robbed of its mystery in order to prevent the vague surmisings and the doubts and fears so prevalent at this period.

In conclusion, let me say that everything should be done to make the child as good a physical machine as possible, but at the same time he should be taught how to guide and control that machine, for of what avail is a man who is a Hercules physically, yet mentally a vegetating dement? The child should be taught self-control; to bear disappointments and trials without whimpering, and especially should false sympathy be tabooed. Introspection and brooding should be discouraged. The play instinct should be cultivated. Too little attention has been given to providing play grounds for children, yet they are a most important factor for their development both mentally and physically. The play grounds were a great factor in Greek education, which produced the highest type of manhood the world has yet seen. Ex-President Roosevelt said, in speaking of the ten million dollar play grounds of Chicago: "They are the greatest civic achievement the world has ever seen." Games which require decision and action should be played, for they not only develop the child physically—especially giving him motor development, which is so important,—but they develop him mentally and are developers of character as well.

The child has been neglected in this age of commercialism, when every thought is bent towards the accumulation of money. Herbert Spencer has well expressed the condition when he says, "The raising of a first-rate bullock is an occupation on which men of education willingly devote much time, inquiry and thought —the bringing up of fine human beings is an occupation tacitly voted unworthy of their attention." This is short-sighted policy, for "if regeneration is ever to lift us to a higher plane, the adolescent nisus will be its main spring." Therefore, it behooves us to make the child as nearly perfect as possible physically, mentally and morally, for children are the nation's greatest asset and progress must come through them if it comes at all.

THE MENACE OF THE FEEBLE MINDED.

BY

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The greatest menace to a proper understanding of feeble mindedness is the preconceived notion of what a feeble minded person is. To most people this term is synonymous with idiot or imbecile and that means a human being who is so distorted mentally that it shows in his outward physical appearance. They are the pitiable wretches that one occasionally sees, or that one knows in his home community who passed along the street, known as "Crazy Jane" or "The Silly Boy" or by some such familiar term.

While such persons as these exist and have always existed in every community, they are the least of our troubles. They are poor, unfortunate, miserable beings, a burden to all that have to do with them, but nevertheless they do not constitute the great social problem that we find in the higher group of the feeble minded which we now call the Moron group.

We have known little about these people until recently, because we had no accurate means of determining who they were. We have all known that there are people in the community who do not get along well. There are people who do things that make us call them "fools," but we have not realized that even that meant they were irresponsible, yet such is the case. They constitute the great army of ne'er-do-wells, the great mass of people who cannot learn to do things rightly. Whether it be mere matters of every day work or whether it be conformity to social conventions or to law, it makes no difference; the same inability to conform marks them as below the normal level of intelligence. But these things do not appear usually until they are adults, and by that time they have either fallen into a form of living which we are unwilling to disturb, no matter how low or degrading it may be as long as it does not absolutely violate law, or else they have become criminal and we have treated them as criminals. But we are now able to detect these people. We are able to determine, while they are still children, that they are lacking in that brain power which is essential to enable them to function like normal human beings. We therefore have the opportunity, if we will, of picking out these children and treating them as their condition requires.

At the Training School at Vineland, New Jersey, they have established a department of research for the study of these conditions. As a result of five years study of these people, some things have been found out which are helpful in understanding the problem and the treatment of these cases.

By means of the Binet measuring scale of intelligence which is in use there, it can now be determined whether a child is progressing, so far as his mentality is concerned, at the normal rate or whether he is one, two or three years behind what he ought to be. Further, experience and study have shown that if a child is only *one or two* years behind, he can, with special care and special training, be taught those things that are essential to functioning normally in society. In other words, he can become a normal person, although perhaps a little slow.

But if he is *more than three* years behind according to this scale, there is a more fundamental reason for his backwardness. In other words, his brain has not developed as it should and he is feeble minded.

Now, if he is feeble minded, he is never able to compete with his fellows in the struggle for existence; he is never able to manage his own affairs with ordinary prudence. The consequence is, that when he gets out in the world it is impossible for him to live a normal life. That means that not being able to earn an honest living in an honest way, he must make it in some other way. If he is of a phlegmatic temperament he may become simply a pauper; not being able to work, society will not allow him to starve and so he becomes an inmate of the almshouse. Of course a certain small percentage have friends who provide for them and they are not heard of in society.

But if this defective person is of a different temperament, he is not content to simply starve until society helps him out, but he takes the matter in his own incompetent hands and either steals or earns money by illegitimate methods—he becomes a criminal. If the defective is a female, one of the most natural courses for her both because she has not intellect enough to have any control over her sex impulses and because by a perversion of that impulse she is able most easily to earn money, as, and naturally becomes a prostitute.

And so we see *apriori* that there is a well paved road for the feeble minded person to either the almshouse or to the prison or to the *brothel*; and most of them who are not cared for by friends follow this road and sooner or later end up in these places.

That this is no mere theory, we may quote some figures as to what has actually happened.

Unfortunately we have not been studying these problems long enough to have exact data, but there are many indications that somewhere from 10 to 30 per cent. of criminals are feeble-minded and have fallen into the criminal life because of defective mentality; it is quite probable that an equal proportion of the people in out houses of prostitution are also feeble minded.

Careful examination of children in at least three large reformatories have shown that the inmates of these institutions are feeble minded to the number of 25 per cent. The Eugenics

Laboratory in London has made some investigations which indicate that pauperism is hereditary and it is probably largely due to mental defect. From our studies at Vineland we have learned that a large percentage of drunkards are so because they are feeble minded and unable to control their appetites. If we say then that in round numbers one-fourth of all of these classes are replenished from the mentally defective group, we see the first reason why feeble mindedness is a menace to society because it is contributing such a large percentage to these groups that are making us trouble all the time. But this is not all.

A feeble minded person of this high grade is always a dangerous person to have about. Those that we have known probably in our home community as referred to earlier in this paper as "Silly Boy" or "Crazy Jane" or whatnot, have usually been considered as unfortunate and all that, but still harmless and innocent. And it may be that in a great many cases they have lived their lives and have been harmless. Yet each one was all the time a dangerous person. The very nature of their condition means danger. They are lacking in self-control while at the same time they have the same impulses and the same passions as normal people so that had it happened that they had been aroused, had been excited or angered, they would have done the most atrocious things, bringing shame and disgrace upon people and causing the loss of life and property. One has only to read the morning paper with a discriminating thought and knowledge of this condition to realize that an immense amount of crime is committed by persons who are feeble minded.

Not infrequently one finds, if he reads the article through, such a statement as this, "This person has been considered from childhood to be weak minded." So the second reason for considering them a menace to society is this, that even though they are cared for by some philanthropic person or possibly a relative who is able to take care of them and they are kept at home, nevertheless, they are even then a menace, because one can never tell when some primitive instinct or impulse may lead them to do things for which they are not responsible.

These would seem to be sufficient grounds to justify the claim that the feeble minded are a menace to society and yet these two items pale into insignificance before the third, which is the appalling power of heredity in this kind of stock. Feeble mindedness is transmitted from father to son from grandparent s-to grandchildren with a sureness and a prolixity that is simply appalling. Tredgold has estimated that this type of family increases at twice the rate of the general population. Our own researches at Vineland have given us families that show an enormous number of feeble minded individuals. We have traced them back at least five generations and it shows no tendency to run out as many seem to think. Indeed, it conforms very well to Mendelian inheritance for we find such things as this: That two feeble minded parents always have feeble minded children. We find that it sometimes skips a generation coming out in the grandchildren with redoubled force. We have studied over two hundred families and find that 65 per cent. of them show the hereditary character.

I can show you here only a few family histories to fairly illustrate the condition.

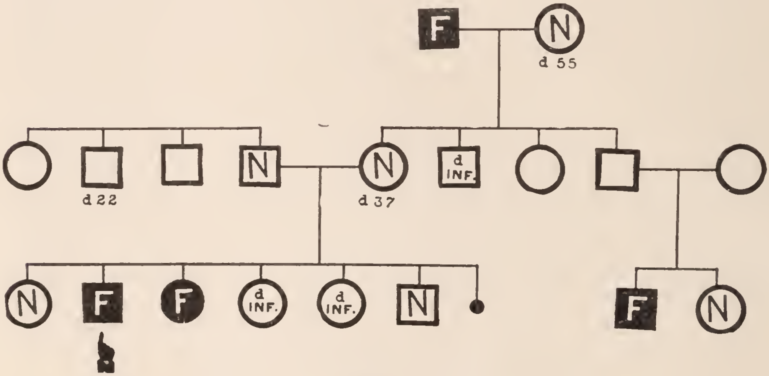

Chart I

EXPLANATION OF SYMBOLS.

Square represents males.
Circle represents females.
Square or circle with nothing in it means condition undetermined.
The white F. on black background means a feeble minded individual.
D. Inf. means died in infancy.
N. inside the square or circle means that the person was normal.
All persons on the same horizontal line belong to the same generation.
Those dependent from the same horizontal line are brothers and sisters.
A vertical line leads up to the line connecting the parents of the group.
The small black circle means miscarriage.
S. syphilis.
Sx. sexually immoral.
T. tuberculous.
C. criminal.
A. alcoholic.
The index hand points to the child or children in the Training School at Vineland, New Jersey.

Chart I. is a comparatively innocent one. The boy in the Vineland Institution, shown by the hand, had a feeble minded sister, two sisters that died in infancy and a brother and sister normal and there was one miscarriage. The parents of this family were both normal, the father had three brothers and sisters of whom nothing is known, the mother had three of whom one died in infancy, and one had two children, one feeble minded and one normal. The grandparents of our child were mother normal, father feeble minded. We thus have defect appearing in the grandchildren from two sides, although none is known among the children.

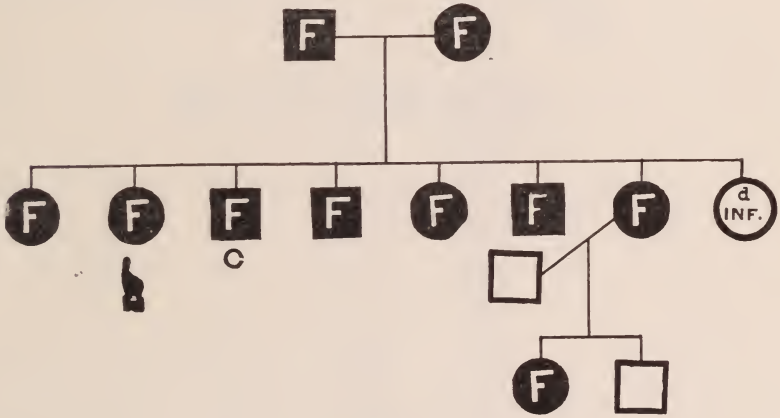

Chart II

Chart II. is short but intensive. Our child has three feeble minded sisters and three feeble minded brothers and a sister that died in infancy. One of the sisters has married and has two children, one of whom is feeble minded the other is as yet undetermined. These children were the offspring of two feeble minded parents, so that in that whole family story for three generations there is not one person known to be normal.

Chart III. shows some bad moral complications. Our child, a girl, is the daughter of a prostitute, this woman has had four other children, and two still births, the children died in infancy except one which cannot be determined. This woman had three feeble minded brothers and one normal, also a half-brother that was feeble minded. The parents of this generation were a feeble minded alcoholic man and a woman who was a prostitute and had two feeble minded brothers. Their parents in turn were a feeble minded man who has a feeble minded brother. Here again we have four generations with eleven feeble minded persons, two prostitutes, one drunkard, three children died in infancy, three miscarriages or stillbirths and four undetermined, only three normal people known.

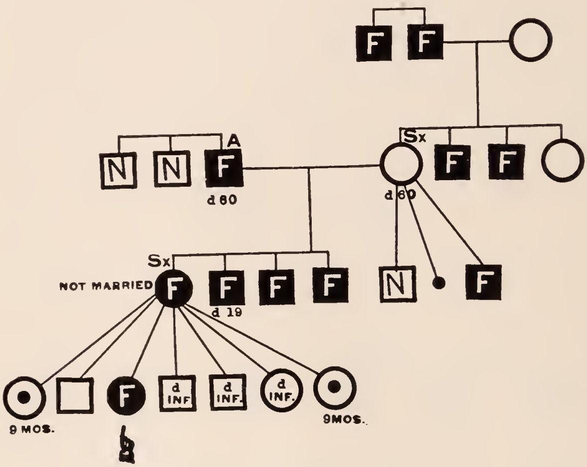

Chart III

Chart IV. is a sample of one of the blacker looking families. Our girl is the child of a feeble minded, alcoholic, syphilitic man and a feeble minded woman. This woman had ten brothers and sisters who were feeble minded, one was syphilitic and immoral. The parents of this family were an immoral woman who was feeble minded and twice married, her first husband was feeble minded as also was the second. The children that we have enumerated were the children of the first husband, the second husband also had two children, a girl was feeble minded and prostitute, she had three illegitimate children of whom one is known to have been feeble minded, her sister died in infancy. The great grandparents of our child are unknown, but the grandmother was twice married and her second husband was a feeble minded man, they had five feeble minded children of whom one was alcoholic, he married and had five feeble minded children all of whom were alcoholic. One of these married and had two feeble minded children. Here are shown twenty-seven feeble minded persons in four generations. At least three persons actually immoral, two suffering from syphilis and at least seven alcoholic.

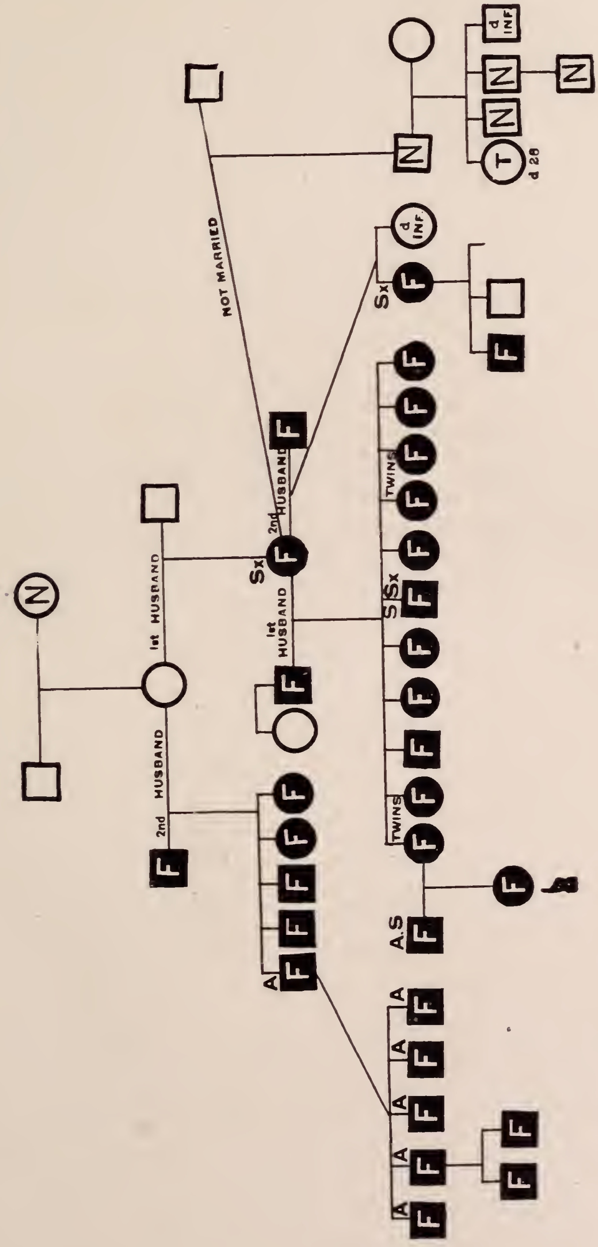
N
1st HUSBAND
2nd HUSBAND
Sx
2nd HUSBAND
1st HUSBAND
NOT MARRIED
TWINS
TWINS
S Sx
Sx
A
A.S
d INF.
T
d 28
N
F

Chart IV

These charts must suffice for samples, the rest will be published elsewhere in the near future.

You have read of the famous Jukes family in New York. You have thought that it was a wonderful exception. We have found two such families in the little State of New Jersey. Of one we have traced the relatives, blood and by marriage, to the number 976, of these only 141 can be determined to have been normal, 286 were distinctly feeble minded. The offspring of this very family are today among the most serious social problems that the charity workers of this State have to deal with.

Before closing I must answer briefly your question, what is to be done about it?

This divides itself into two parts. First, what can we do with those who are already born, these children are all about us. We have determined that at least two per cent. of the school population belongs to this class. With these there is only one thing, test them out by the Binet scale and determine who they are. Then place them in institutions, if possible, if this can not be done then in special classes in the public schools where they will be trained to do hand work as well as they can and thus become happy and as little a burden upon society as possible.

The responsibility here lies in the fact that if we do not detect them but send them to school to be taught the usual reading and writing and arithmetic and geography, and the like, we make a fatal mistake. They cannot learn these things in any practical way. Because of good memory they can seem to learn some of it but they are never able to make any practical use of it and we thus waste the time and fail of the opportunity to teach them to do things which would make them happy and somewhat useful. As citizens we must insist that our educators face this problem and deal with it at least in the light of present knowledge.

But we must go further than this. This is a day of prevention. What can be done to prevent this stream of bad protoplasm from coming into the world and keeplng us busy with social problems? We can, if we will, prevent the birth of feeble minded children by, *first* preventing the marriage of feeble minded people, *second* by putting in institutions where they may be kept for life, all persons who are capable of begetting or bearing children and who would be likely to give birth to feeble minded children. *Thirdly*, we can sterilize these persons who would become the parents of feeble minded children. Of these three methods the ideal one would be to place them all in colonies where they would be kept as long as they live. One generation of work would then destroy the whole inheritance line. But inasmuch as this cannot be done entirely and is too slow, we must, I believe, resort to some form of either castration or vasectomy and it must be practiced on the female as well as on the male. It must be carefully safe guarded to prevent malpractice but that can easily be done. If we would cope successfully with this menace of feeble mindedness, we must put aside sentiment and deal with the problem in a practical manner.

Vineland, New Jersey, April 25th, 1911.

SOCIETY TRANSACTIONS

NEW ENGLAND PEDIATRIC SOCIETY.

The 15th meeting of the New England Pediatric Society was held March 25, 1911 at the Boston Medical Library. Dr. John Lovett Morse in the chair. The following papers were read:

(1). A Case of Cretinism, by Mary F. Hobart, M. D., Boston, Mass.

(2). A Case of Oxcephalus, by Arthur W. Fairbanks, M. D., Boston, Mass.

(3). Report and Consideration of Two Cases of Scurvy, by Fred P. Webster, M. D., Portland, Maine.

(4). The Value of Direct Inspection of the Larynx, Trachea and Bronchi in Children, by D. Crosby Green, Jr., M. D., Boston, Mass.

(5). A Directory for Wet Nurses. Its Experiences for One Year, by Fritz B. Talbot, M. D., Boston, Mass.

A Case of Cretinism was presented by Dr. Mary F. Hobart. Baby A. T. was brought to my office September 29, 1910. He was then fourteen months old. He is the youngest of five children. The others are normal and healthy. The mother is well; the father is said to be in poor health, but keeps at his work. There is nothing unusual in the history of Mrs. T.'s pregnancy and labor with this child. He weighed eight and one-half pounds at birth—was deeply jaundiced when nine days old; was breast fed for two months. The baby has always been delicate and dull; not bright like the other children.

On examination; weight eleven and one-half pounds, pallor marked. Rachitical head, the anterior fontanelle being enormous. Forehead protruding; bulging blue eyes, nystagmus marked; no teeth; mouth open; tongue swollen and protruding; mouth breathing; rachitical rosary marked; abdomen large; lower lumbar vertebrae prominent. Inguinal glands enlarged. Fingers short; hands flabby; lower extremities limp and flabby. Does not kick his legs. On holding him up, he makes no effort to stand. Does not recognize his mother or prefer her to the doctor.

His digestion was poor; bowels constipated. I advised whole milk with the addition of Mellin's Food. Also ordered one teaspoonful of cod liver oil with phosphorus one-tenth of a millegramme, once daily. Also beef juice 30 cc. daily.

November 16, six weeks later, his digestion was better. He had gained four pounds; makes more muscular efforts; tries to rise from recumbent posture. Treatment continued with addition of orange juice.

January 21, two months later, much better and brighter. Weighs 18 pounds, (a gain of seven pounds in four months). Tongue still swollen and protruding and respiration still noisy. He was then referred to the nose and throat department of the New England Hospital and an adenoid was removed. At this visit he was found to have one tooth, the lower central incisive.

February 18, thyroid medication was begun. He was given one half of one of Armour's five grain tablets twice daily.

March 1, much improved. Can sit alone. Handles and plays with small objects. Can pull himself up from lying posture. Almost stands when held up. Mouth and tongue about the same, respiration not improved. Knows his mother and cries for her when held by the doctor. Has now two teeth, the second one being a lower molar.

Dr. Fairbanks: Dr. Hobart's paper.

The child at first glance is strongly suggestive of the Mongolian type of mental defect. The rapid improvement, however, as the doctor describes it, would rather negative the Mongolian type of mental deficiency but it is only fair to say that once in a while you will meet with a case that will improve very rapidly indeed up to a certain point. Possibly these cases are of Mongolian deficiency with a deficient thyroid secretion, and in some cases, at least, there seems to be a mixed type. We have tried thyroid in a good many of these cases, as well as in cases of ordinary mental defect, not of the Mongolian type, and some of them have improved quite rapidly to a certain point and then there is cessation in improvement. As one sees this child there is strong Mongolian cast to the eyes. It would be interesting to know what the measurements of the head are in this connection.

Dr. Morse: Dr. Hobart's paper.

I have here some pictures of a case of cretinism which I got hold of in June, 1898, when it was six months old. There is a rather poor picture of the child when I first saw it, and another, taken seven weeks later, showing the effect of the treatment. It is noticeable that he lost all his hair during this time. The two others were taken last summer, when he was twelve and one-half years old, that is, twelve years after beginning the treatment. The one without clothes unfortunately does not take in the head, but shows the relation between the limbs and the body. The other shows the boy with his two brothers standing in a row. I doubt if many of you can tell which of the three is the cretin.

Dr. Lane: Dr. Hobart's paper.

I should like to ask for any further development of the cases of cretinism that the members may know about, because recently I have been reading Dr. Charles Mayo's papers, and he speaks of the comparative hopelessness of medical measures, saying that the improvement with the thyroid extract means converting a hopeless inbecile into a destructive idiot, and this is contrary to what my medical teaching has been. I wonder if this case which Dr. Morse has shown was the one which was in the City Hospital in 1898–99, and in which very definite improvement took place during the child's stay in the hospital, for perhaps four or five months, under the administration of thyroid.

Dr. Morse: Replying to Dr. Lane's question.

This is not the case you mention. This boy is about two years behind other boys of his age in school, and except for this gets along perfectly well. His father tells me that he is very bright in some of his studies, but that it is rather hard for him to grasp some of the others. He plays on a baseball team with boys of his age and no one would ever think, on seeing him, that he was not all right in every way. I am inclined to think that when treatment is begun early these cases always improve and become reasonably good citizens.

Oxycephalus was the subject of a paper presented by Arthur W. Fairbanks, M. D., Boston. A term that has come to be applied in a general way to several forms of cranial deformity associated with disturbance of vision, due to changes in the retina.

Oxycephalus is oddly one of these forms of cranial malformation giving rise to these ocular changes. These changes consist of optic neuritis, with eventual atrophy; choked disc, sometimes accompanied by hemorrhages; strabismus, usually external; and occasionally a certain degree of exophthalmos. The impairment of vision incident to these abnormalities in the visual apparatus may be apparent very early in life, but is not usually evident until some months, and occasionally several years, have elapsed. It may then progress to total blindness, or may gradually subside, leaving more or less permanent diminution in visual power. The mentality is never impaired, per se, in this condition.

The case shown is a typical example of the condition, but it belongs rather to the type of scapho-cephalus, than oxycephalus. The condition is primarily due to the premature ossification of the cranial sutures, the particular type of skull depending upon the particular sutures involved. In this boy it is the sagittal suture that is prematurely synostosed, and the condition is well shown in the radiograph, which is the first radiographic plate of this condition that has been published.

Dr. Thomas: Dr. Fairbank's paper.

There is not a great deal that I can add to what Dr. Fairbanks has already said. The most misleading thing was the rather sudden onset of the symptoms. If there had been a gradual onset and it had intermitted at the first. I think we should hardly have thought that he had an intracranial growth, But when we first saw him the picture was very typical of intracranial pressure, and it was only after he was quiet in the hospital with the symptoms subsiding that we began to doubt whether the condition was due to a new growth. Of course tumors do the same thing and quiet down and then start up all the symptoms again. The child was discharged and then was sent back to the hospital again, and at this time certain symptoms like the slowing of rapid movements seemed to point rather to the cerebellum being chiefly affected. The absence of other symptoms and the complete cessation of active symptoms led us to postpone decompression operation. Of course another question comes up in these cases when there is, of course, intracranial pressure. The great majority of cases have shown optic atrophy, and it may be that we erred in this case in not doing the decompression operation so as to avoid the chance of later development of optic atrophy. But the boy's eyes have improved, the general symptoms improving and it seems now that it is hardly necessary. I would say that at the Children's Hospital and at the City Hospital where I have seen a great many cases of deformities of the skull. I have never seen a case of this kind before, or if it was there, I have overlooked it; that the most of the cases of deformities of the skull one sees are developmental defects in feeble minded children and probably do not produce active symptoms. It would behoove us, therefore, to always be on our guard in cases of deformities of the skull though cases like the ones reported seem to be the only ones where the symptoms are produced by the malformation of the skull.

I would like to enquire if any of the gentlemen have seen cases in their clinical work. We have seen a great many children for a good many years without having seen one. Or whether anyone has found a case reported in American literature. The cases I have found have all been reported in the foreign journal, with perhaps, one exception.

Dr. Fairbanks: In closing.

I would only say that these cases have nothing to do with deformities produced by injury at birth, nothing to do with the various deformed craniums that we see as the result of difficult labors or as the result of deficient development of the brain due to difficult labors. It seems to me that this case illustrates how very narrow a specialized course of work or study may be. I have been interested for some years in anthropology so I knew that these types of crania occurred but as anthropology does not deal with clinical facts, I had no idea that there were any clinical symptoms connected with the deformity. I was perfectly familiar with the symptoms of intracranial tumor, but I had no idea that these symptoms would be present and pronounced and due solely to an abnormal skull so I failed to connect the two, as I was working along two entirely different lines.

Infantile Scurvy.—Dr. Webster reported two cases of infantile scurvy and went into the differential diagnosis between that disease and infantile paralysis with great detail.

Dr. Fairbanks: Dr. Webster's paper.

It seems to me an interesting point to explain the real cause of pseudo palsy. It has been explained on the basis of the pain. It seems to me that this is entirely inadequate. We know that where we have severe pain or at least immobility due to pain we have muscular spasm present. I know of no exception to that unless scurvy is one, whereas in scorbutus there is, as a rule at least, complete relaxation, absolutely as complete as in anterior poliomyelitis. I have had several cases sent to me with the diagnosis of poliomyelitis. Now in all other cases where the child suffers from pain we have muscular rigidity present always, and I believe that if the mere pain were the cause of the pseudo palsy, we would have muscular spasm with it, and not complete relaxation. Now a word in regard to anterior poliomyelitis and the text-book description of it. I think that all of us who have had to do with anterior poliomyelitis in the last two years, know that pain is often a most pronounced feature of the cases. In the first case that I saw where pain was the only feature beside muscular rigidity, three years ago, I was unable at first to make a diagnosis, and I had been seeing cases of anterior poliomyelitis previous to that in large numbers at the Children's Hospital for some years and this case I thought had a fractured pelvis. It proved after six months definitely to be anterior poliomyelitis, but we were unable to make the diagnosis either in the out patient department or in the house, the surgeons also being unable to make one. The year before last I saw two cases at the City Hospital in consultation where they refused to believe that the cases were acute poliomyelitis because the symptoms present were pain and muscular spasm. The muscular spasm masked the paralysis. I would also say that I have never seen a case of scurvy where the deep reflexes were really absent. I do not think that the plantar reflex in a child under a year old is of any value whatever. In the great majority of cases it is of the exterior type, which does not mean anything at all abnormal. I think the deep reflexes are always present, if you try hard enough to get them in scurvy, and absent of course in anterior poliomyelitis.

I mean that you do not get rigidity in those cases of anterior poliomyelitis where the pain is intense.

Dr. Rotch I think misunderstood me. I spoke of the theory of the causation of the apparent paralysis in scurvy. I have always felt that there would be a certain amount of muscular spasm with resultant limitation of passive motion, if it were true that the apparent paralysis were really due to pain. Everywhere else where we have pain on movement of a limb, the limb is held rigid, as in the case of the spine in Pott's disease, the rigidity is pronounced. In the instances of scorbutic paralysis, however, that I have seen, the legs are relaxed, not spastic as would be expected if the pain were the sole cause of the paralysis. I also drew attention to the fact that even in certain instances of anterior poliomyelitis, in the early period when pain is severe, we have muscular spasm and sometimes so much that the typical flaccid paralysis is entirely masked, perhaps for many days. I was simply comparing the two conditions in connection with the causation of the scorbutic paralysis, not with the view of differential diagnosis between the two conditions.

Dr. Rotch: Dr. Webster's paper.

I think we should make a distinction between active pain and pain only on motion. I have usually done so in speaking of the pseudo paralysis connected with scorbutus, meaning that you cause pain by moving the baby's legs but that when the baby is left alone he does not suffer pain. It seems to me that we very rarely have spasm enough to cause pain. The baby is quiescent and does not cry unless you touch it. I suppose that the pain is not due to muscular sensitiveness but to a condition connected with some disturbance in the joints.

Dr. Mary Hobart: Dr. Webster's paper.

I do not quite agree that the muscles in scurvy are always relaxed. One of the most severe cases I have had showed marked opisthotonos for three or four days.

Scurvy in Infantile Paralysis.

Dr. Morse: Dr. Webster's paper on this subject said.

I want to say a word or two about pain and rigidity in scurvy and infantile paralysis. It seems to me that the conditions in the two diseases are as follows: In scurvy, when the child is left alone, it keeps its legs in the position which is most comfortable for it. The muscles are relaxed because it hurts it to move. The condition, is therefore, apparently one of flaccidity. There is no pain unless the legs are moved. Just as soon as the child is touched or thinks it is about to be touched, it stiffens up and becomes rigid in order to avoid motion, which causes pain. If, however, there is a great deal of swelling in the leg, it remains flaccid. The knee jerks are usually easily obtainable in the milder cases of scurvy, but in the severe cases the legs are held so rigidly that they cannot be elicited. In the typical cases of infantile paralysis the legs are, of course, flaccid. In most instances they are flaccid even when there is pain. They have pain, moreover, without motion. In a certain number of cases of infantile paralysis with pain, in which there is still muscular power left because only a part of the muscles are paralyzed there is rigidity. The rigidity is present in those cases not only during but before the examination. This rigidity may be very marked. I remember one case in which I could not tell whether the child had infantile paralysis or hip disease until I gave a little ether. When it got ether enough to dull sensation, the leg in which the trouble was located was flaccid, while the muscular tone remained in the other. Personally, I have never seen a case in which I was unable to make a diagnosis between scurvy and infantile paralysis. I think it can always be made without much difficulty if the two diseases are kept in mind; if they are not, mistakes are very likely to be made.

Dr. Webster: In closing.

I think that the text-books give one a rather misleading idea. The picture is not always so plain and definite as the books put it and I am pleased to learn that members here have seen cases of scurvy in which the extremities were flaccid. No mention is made of this in the text books, to my knowledge except that Neuman, in Jacobi's translation mentions this, saying that the muscles are relaxed in order to diminish pain. I would also add that the text books do not say anything about spasticity in infantile paralysis.

The Value of Direct Inspection of the Larynx, Trachea and Bronchi in Children.—Dr. Greene exhibited laryngeal specula of the Killian Jackson and Mosher types. For routine examination he considered the Jackson instrument the most convenient, while for certain operative procedures the Mosher speculum had the advantage. In general light bearing specula and monchiscopes are the easiest to use.

The method of introduction of these instruments was then demonstrated. Especial importance was given to the position of the head and neck of the subject. The head should be extended backward on the occipito-atlantal joint while the cervical spine is held forward. At the same time the head should be rotated to one side to bring one angle of the mouth into line with the trachea. This position of the head and neck should be maintained whether the subject be examined while sitting in the lap of an assistant or recumbent on the back or side.

The spatula of the speculum is introduced through that angle of the mouth which is in line with the trachea and passed backward over the base of the tongue until the epiglottis is brought into view. It is then pased over the epiglottis and pressed forward against its posterior surface. This maneuver brings the larynx into the line of direct vision. When the technic of direct inspection of the larynx has been learned, the passage of bronchoscopic tubes through the glottis is comparatively easy.

The special value of this method as applied to the children is that it is in many cases the only possible method of seeing the interior of the larynx. In operations for neoplasms or the removal of foreign bodies its usefulness is obvious. The technique is not very difficult and should be acquired by pediatrists.

Dr. Coolidge: Dr. Greene's paper.

As compared with an adult or an older child, an infant's larynx is very difficult to see and to treat by the older laryngoscopic methods, whereas, by direct inspection it is comparatively easy. I doubt if any one, not practiced in doing it, appreciates either how hard it used to be to see a baby's larynx or how easily it can now be done with the tube spatula. In regard to a few details. I do not think that ether is always necessary, in fact it is to be avoided as far as possible in cases of laryngeal stenosis. I believe that the pain and discomfort to the infant is less than in a digital examination for adenoids. Especially in the very young I prefer the dorsal position with the head over the end of the table, and I like to support the head myself with one hand while holding the spatula with the other. The advantages of the tube spatula of Jackson with the small light in the distal end, is that you escape the necessity of constant adjustment of a head mirror, and of darkening the room. For anything but inspection and the most simple operations the open spatula of Dr Mosher has manifest advantages. This direct method of seeing and treating the larynx in infants and children is of the greatest value in diagnosis, in papilloma and other obstructive conditions of the larynx and in the removal of foreign bodies. Papilloma in children is a serious disease where, for a period of months or even years, some slight difference in treatment may make the difference between life and death. In these cases direct inspection may easily make that difference. It has been said that the only difficulty in passing a bronchoscope is in getting a good view of the larynx. Under good conditions there is seldom any difficulty at all. A larynx should always be cocainized before anything is done in it or through it, even if the patient is under a general anaesthetic.

Wet Nurses' Directory: One Year's Experience.—The Directory for Wet Nurses which has been run under the auspices of the Hospital of the Massachusetts Infant Asylun has run for twelve months with great success. The wet nurses were obtained at various lying-in hospitals. They and their babies came to the Directory and home where they received board and lodging free until a situation was obtained for them. Before they were admitted each mother and child had a complete physical examination made, to exclude tuberculosis and syphilis and while under observation their babies were weighed to see whether the milk was good or not.

A fee of ten dollars was charged by the Directory for supplying these women. This fee was used as far as possible to pay the expenses of the institution. The balance was supplied by charity.

When a wet nurse is sent out on a case her baby goes with her. They receive in the neighborhood of eight dollars a week. Thirty-five women have been under the care of the Directory for varying lengths of time. The majority have done extremely well for the sick baby. They have all said, "I do not know what I should have done if this opportunity had not been given me." Some of them have saved one hundred dollars or more with which to start in life. Others have been married under our supervision and others have obtained permanent homes.

The obstacles of establishing a directory for wet nurses seem very big at first but become less and less formidable as experience increases. The troubles of the past year have been insignificant when compared to the good the institution has done. The writer believes that similar directories could be established in all large cities for the good of the sick babies and the practitioners on the one hand and of the wet nurses and their children on the other.

Dr. Bancroft: Dr. Talbot's paper.

I should like to ask Dr. Talbot if he makes any correlation between the age of the baby to whom the wet nurse goes and that of her own baby.

Dr. Denny: Dr. Talbot's paper.

I would like to express my appreciation of what Dr. Talbot has done in filling a long-felt want both of physicians and parents. The Directory saves the physician a great deal of time in looking around for wet nurses. Besides the accommodation to the physician and to the parents is really a very great charity and is doing a great deal of good for a class of women who need help very much.

Dr. Talbot:

If the wet nurse is going to a young baby I like to send one with a young baby, but I do not think it makes the least bit of difference, because we have one woman whose baby is 15 months old who is still saving the lives of many babies. It does not seem to make any difference as long as the milk does good. Dr. Morse knows of one woman who nursed until her own baby was 18 months old.

RETROSPECT OF CURRENT PEDIATRIC LITERATURE.

Diseases of the Alimentary System

Under the Charge of

JAMES WARREN VAN DERSLICE, M. D.

Assistant Professor of Pediatrics, Rush Medical College, Chicago, Ill.

Intestinal Indigestion in Children.—The chronic intestinal indigestion in children after the second year of life is discussed (*Journal A. M. A.*, December 24), by S. M. Hamill and K. D. Blackfan, Philadelphia. While these chronic disturbances of the intestinal tract may be secondary to disturbances of the gastric digestion or to recurring attacks of acute gastro-intestinal disturbance in a large percentage, if not the majority of cases, the condition is primary, and it is in these, which eventually result in the more pronounced types, that the earlier symptoms are frequently overlooked. In the routine examination of the stools of apparently normal children foul smelling feces, sometimes containing particles of undigested food, are a common finding. Closer examination will often result in the discovery of other symptoms of disordered digestion of which the child has made no complaint. Nevertheless, this one symptom may continue indefinitely as the only one, and this is important, as it is the best time to treat it early. The only satisfactory way of making the diagnosis of these milder forms is by the routine examination of the stools, and this should be done several times at intervals of several days. The authors describe the stools which they consider as normal. It should be of faintly alkaline. of amphoteric or neutral reaction, well formed, light or medium brown in color, and have a slight and not especially offensive fecal odor. It should show no evidence of fermentation and only slight traces of mucus. In intestinal indigestion the stools show evidence of abnormality, depending on the particular element of diet that is not satisfactorily disposed of. There evidently occurs in the intestinal tract a diminution of the resistance to the putrefactive bacteria in the slighter cases without especially interfering with its digestive function. A careful study of the urine may direct attention to an intestinal indigestion by the presence of indican, phenol, etc., when the stools show no evidence of abnormality. Aside from the stools, the symptoms may vary from nothing to a very serious clinical picture and are by no means restricted to the intestinal tract. The cardiovascular system may be most affected and on the part of the nervous system there is no limit to what may be observed. The most common nervous phenomena are restless sleep, night terrors, and sometimes insomnia. The authors call especial attention to the restlessness and irritability, sometimes culminating in convulsive attacks which may be the foundation of future epilepsy. It is difficult to explain why certain children show more marked nervous symptoms than others and the authors think that the term neurasthenia may be properly applied to these nervous symptoms dependent on the toxins developed by intestinal indigestion. Distention of the abdomen does not develop in all instances, and, when vomiting of toxic origin also occurs, the picture of tuberculous peritonitis may be strongly suggested and its exclusion be difficult. Another symptom especially mentioned is the peculiar form of dyspnea or "sighing respiration," most marked after meals, especially supper, or when food is taken immediately after severe exercise. The authors think we may attribute it to some toxic effect on the respiratory centers.

The treatment divides itself into, first, absolute control of the case, i. e., the full co-operation of the mother and nurse. This is essential for success.

Second, hygienic measures, life in the open air, regulated exercise, slow eating and due mastication, early retiring and long hours of sleep; attention to the skin and excretions is important. Defective teeth must be attended to, as well as disturbing adenoids and tonsils. The diet should be well selected, according to the needs, and over-eating prevented. Drugs are of least importance. The intestinal antiseptics have not been of any use, but in the beginning of the treatment a course of calomel, followed by colonic washings, is effective. Drugs are seldom needed for constipation. The free use of water, regularity of habits and a selected diet will control this condition. As a temporary measure olive oil enemas and non-irritant suppositories are preferable to laxatives. Bitter tonics are the only ones that are needed.

Eosinophile Intestinal Crises in Infants.—Prof. Leo Langstein, (*Munch. Med. Woch.*; March 21, p. 623). In infants sudden attacks occur in which mucus and pus are passed per anum containing large quantities of eosinophile cells. Alimentary and infective disturbances can usually be excluded and the disorder is probably a complication of the constitutional anomaly described by A. Czerny as the exudative diathesis. In this the intestinal mucosa frequently participates. Since 1908 the writer has repeatedly examined the muco-purulent stools of infants and found that eosinophile cells are much more commonly present than is usually supposed.

A child weighing 4,000 gm. was, on April 25, admitted to hospital. During the first three weeks of life it had been fed exclusively on the breast and daily passed two normal stools. In the fourth week it was fed partly by the breast and partly artificially. It became restless and on one day passed five green, slimy, watery stools. On admission it was fed on "albumin milk" and passed normal stools. At five weeks slight eczema of the face appeared. On the following day five muco-purulent stools were passed which contained a quantity of eosinophile cells and on the two following days the same occurred. The eczema increased. The child otherwise seemed well and in five days lost only 100 gm. in weight. The temperature was normal. The abnormal stools ceased as suddenly as they had come and were replaced by one or two normal evacuations daily. A blood-count showed that the eosinophile cells formed eight per cent. As weight was not gained the child was placed on butter-milk and was discharged thriving well. In this case the eosinophile intestinal crises coincided with the appearance of eczema, which is also a symptom of the exudative diathesis.

It is important to know of these eosinophile crises. Muco-purulent stools in an infant a few weeks old, especially if artificially reared, are usually assumed to indicate intestinal infection with at best a dubious prognosis. But if eosinophile cells are present in the discharges the prognosis is favorable. It is not necessary to place the child on a starvation diet as in acute alimentary and infective intestinal disturbances or to insist on breast feeding. A slight restriction of the amount of nourishment is all that is required. The general condition of the child is scarcely affected; the temperature is normal and the loss of weight inconsiderable. Strumpell has compared the eosinophilia of infantile intestinal crises to that of asthma and named the condition "intestinal asthma."

Diseases of the Respiratory System

Under the Charge of

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Topography in Pulmonary Localizations in Pneumonia of Children.—E. Weill and G. Mouriquand have examined 240 cases of pneumonia in children with reference to the formation of a triangle of hepatization, and have been impressed with the frequency with which the pneumococcus attacks certain portions of the lungs. The most frequent localizations of consolidation are the left base and right apex. Out of the 240 cases 200 were distinctly localized; of these 82 involved the left base; 64 the right apex; 32 the right base; 15 the left apex. Radioscopy shows with especial plainness the localization at the apices. Here develops a triangle of hepatization with its base in the axilla and apex at the hilum of the lung. It is quite superficial and cannot easily be recognized by the stethoscope. In 32 cases examined radioscopically it was demonstrated in 26.—*Annales de Medicine et Chirurgie Infantiles.*

Acute Tonsillitis and Its Treatment.—Harold Hays, New York, states that a culture should be made in acute tonsillitis to differentiate if from diphtheria and Vincent's angina. It is always due to infection, and may be caused by streptococci, staphylococci, pneumococci, etc. The streptococcus is the cause in about 80 per cent. of cases. In diphtheria there may be no membrane but the crypts of the tonsil may be filled with pus, and the parenchyma intensely inflamed. Vincent's angina may affect any part of the throat, and when involving the tonsil the membrane will resemble that of diphtheria; here the bacillus and spirillum of Vincent are the cause; ulceration and destruction may be prevented by the use of Lugol's solution and silver nitrate. The author recommends the treatment of tonsillitis by means of a 50 per cent. silver nitrate solution, after thorough anesthetization of the tonsil with cocaine. This treatment is painless and cures the disease in twenty-four hours by destroying the germs at once. The openings of the tonsillar crypts are filled with pus and debris so that sprays will not reach them. The silver is applied to the opening of each crypt, and the patient afterward uses a spray of peroxide of hydrogen.—*Medical Record*, May 13, 1911.

Tuberculosis in Children (*New York State Journ. of Med.*, November, 1910, p. 519).—Godall concludes that tuberculosis is a common disease among children. While the path of entrance is almost always through either the digestive or the respiratory tract, congenital tuberculosis is undoubtedly a possibility. During infancy tuberculosis presents a picture altogether different from that seen in adults; the glandular system frequently bears the brunt of the disease; miliary tuberculosis, tubercular meningitis, abdominal tuberculosis, and bone tuberculosis are relatively frequent; marasmus and erythema nodosum may be due to tubercular toxemia. Pulmonary tuberculosis gives the signs of localized bronchitis, often at the base of the lungs, the rales may be very few, and are often only heard after cough, the classical signs of infiltration and consolidation are usually absent. If the lungs are involved there is usually a rapidly progressing fatal disease. After the twelfth year the lung symptoms approach more to the adult types. A negative Von Pirquet test goes far, at any age, towards excluding tuberculosis—that is, if tuberculosis is not far advanced, if the patient is not in a cachectic condition from any cause (a positive reaction may be caused by typhoid fever), and if he has not had measles within a short time. A positive Von Pirquet test during the first two years of life is strong evidence of active tuberculosis, as latent disease is very uncommon at that age. In older children a quick, strong Von Pirquet reaction usually indicates more or less active disease, while a late or poorly marked reaction indicates latent or inactive disease. In children from six to twelve years of age, with incipient or moderately advanced pulmonary tuberculosis, the prognosis is better than among adults. Finally he urges the great need of outdoor schools and better ventilation in all schools, and State homes for poor children, who cannot be suitably safe-guarded and reared in their own families.

Conditions Which Simulate Phthisis Pulmonalis in Children (*The Polyclinic*, 1910, p. 93).—Clive Riviere.—Pulmonary phthisis in children is not so common as some suppose. At the City of London Hospital for Diseases of the Chest, among 1196 cases of phthisis only 31, or 2.6 per cent., were children of school age, and at the East London Hospital for Children the cases of phthisis were fewer still. Riviere divided cases simulating pulmonary phthisis in children into: (1) Lung conditions, (*a*) physiological conditions, such as blowing breathing at the right apex and in thin children at both apices; (*b*) bronchiectasis and fibrosis, distinguished by the position and nature of the lesions and the general nutrition; (*c*) pulmonary collapse due to bronchial catarrh, nasal obstruction, or both; (*d*) unresolved apical pneumonia; (*e*) tuberculosis of thoracic glands, from which 20 per cent. of living children suffer. (2) General conditions, of which chronic gastro-intestinal cattarrh is the most important. Diagnosis must be made by clinical examination, and the use of the specific tests for tuberculosis.

The Diagnostic Value of Von Pirquet's Tuberculin Reaction (*Brit. Med. Journ.*, 1910, I, p. 1159).—Percival Mills, as the result of investigations in 123 children under twelve, arrives at the following conclusions: (1) Healthy children under twelve do not give the reaction; he found that forty-eight children who showed no evidence of tuberculosis in themselves or in their family history gave no reaction. (2) Tuberculous cases, with rare exceptions give the reaction. In nineteen children, tuberculosis was proved at an operation or by post-mortem examination or by microscopical examination when not obvious, definite caseation in lymphatic glands being considered tuberculous. In two cases which gave no reaction there was found on operation to be tuberculous peritonitis in one case; in the other case there was a tuberculous hydrocele. As tuberculous hydrocele is fairly commonly associated with tuberculous peritonitis, it may be assumed that the peritoneum was tuberculous. It has been found that tuberculous peritonitis has always given a negative result with Calmette's reaction, so it may be expected to be negative in Von Pirquet's reaction. (3) The reaction is of value in doubtful cases (*a*) clinically diagnosed as tuberculous (no pathological diagnosis possible). Thirty-four gave the reaction, and the course and termination of the disease supported the clinical diagnosis. Nine gave no reaction; of these, eight eventually proved to be almost certainly not tuberculous; in the remaining case (spinal caries) the reaction may have been misleading. (*b*) Clinically doubtful. In eleven cases three gave a positive reaction; of these, two were subsequently proved to be tuberculous, and one was a case of lymphadenoma. The reaction was possibly misleading, but some pathologists have considered lymphadenoma to be a form of tuberculous infection. Eight cases giving a negative reaction subsequently proved to be non-tuberculous. J. W. Bride, (*ibid.*, p. 1161), thinks that Von Pirquet's reaction helps (1) the early diagnosis of pulmonary tuberculosis, and distinguishes if from unresolved pneumonia and chronic bronchitis; (2) the early diagnosis of abdominal tuberculosis, and distinguishes if from enteric fever; (3) the diagnosis of the cause of pleuritic effusions. It is not helpful in the diagnosis of (1) tuberculous meningitis; (2) tuberculosis in a child suffering from an acute infectious disease; (3) tuberculosis with much pyrexia.

Asphyxia of the New Born Relieved by Placental Aeration.—M. H. Freund, M. D., of New York, writing on this subject says: In connection with a series of cases reported by Dr. W. E. Fitch in Pediatrics, October, 1910, in which infants born in a state of asphyxia were resuscitated by areation of the maternal surface of the placenta, I wish to report the following case:

Mrs. M. B., 21 years of age, Russian, primipara, was admitted to the obstetrical service of the Sydenham Hospital on November 3, 1910, at 8:30 A. M. She had been in labor 24 hours at the time of admission, not having had any medical attendant previous to that time. Status on admission; temperature, 98.8; pulse, 90, of good quality; respiration, 24. External measurements: Interspinous diameter, 22 cm.; intercristal diameter, 25 cm.; external conjugate, 15 1-2 cm. Fetal heart sounds between relaxations 110 to 114 per minute, going below 100 during uterine contraction. Length of patient, 145 cm.; small type of woman; no deformities; fundus under the ribs; abdomen ovoid, protruding. In spite of two injections of morphine and scopolamine hydrobromate the uterus was almost in a state of tetany, pains occurred every minute with very slight relaxations during the intervals; uterus during contraction was exceptionally hard and tense; position of child ROA. The head was firm in the pelvic brim, having entered with a small segment only, brow palpable to the left. Two hours after admission the patient showed signs of exhaustion and rising temperature, in view of which and of the condition of the fetal heart sounds as previously mentioned, immediate delivery was decided upon. A third injection of morphine and scopolamine hydrobromate was given and the patient was then delivered by Dr. Jarmulowsky with the Tarnieraxistraction forceps. The mother was under chloroform anesthesia during a period of 15 minutes, receiving 15 grams of anesthetic.

The child on birth was asphyxiated, skin livid, heart beating visibly, and pulsation in the cord distinctly palpable. There was no effort at normal respiration. The placenta was at once manually loosened and delivered. The child was placed in a basin of warm water, the placenta being held maternal surface upward, exposed to the air, and washed with warm water to free it of blood clots. After a few minutes the child, though making no attempts at respiration, improved in color, as did the pulsation in the cord in quality and quantity. Thus during thirty-five minutes respiration through the exposed maternal surface of the placenta continued uninterrupted; the pulsations of the cord during this period of time was good, but decreased in number and were of decidedly worse quality as soon as the maternal surface of placenta was placed on the table. Whenever the child showed signs of cyanosis the turning on the stream of oxygen upon the maternal surface of the placenta brought about immediate recovery of color, and the pulse improved in quality. Now the cord was tied and cut; the child cried lustily and has since behaved like normally born children. Today mother and child are perfectly well.—*Medical Record.*

Acute Laryngeal Dyspnea in Children.—Barwell, in the Lancet discusses the causation of the various forms of laryngeal obstruction in children and arranges the various conditions in groups. As to the treatment of spasm, this he observes may be considered under two heads, that of treatment during the paroxysm and that of preventive treatment between the attacks. The spasm of laryngismus stridulus is very short and sharp and there is little time to put the child into a hot bath and pour cold water upon the head, as has been recommended. The quickest and surest way to relieve the spasm is to hook the epiglottis forward with the finger, a manipulation which can easily be taught to the mother or nurse. The spasm also may cease on stimulating the conjunctiva by touching it with the finger or on tickling the nasal mucous membrane with a feather. The inhalation of amyl nitrite may be tried and can be quickly employed by means of breakable glass capsules. A fatal result is extremely rare.

In the preventive treatment overloading of the stomach must be carefully avoided, regular action of the bowels ensured, and all gastro-intestinal irritation prevented, while a course of rhubarb and soda or magnesia is indicated; a change of air to a higher locality, or even to the top of the house, is very beneficial; and rickets, if present, must be treated. Adenoids are a powerful source of irritation and their removal in children predisposed to laryngismus is an essential part of the treatment. As a sedative, if the attacks are frequent and severe, small doses of bromide may be prescribed; or, better, the fluid extract of grindelia in doses of ten minims in milk every three or four hours.

The spasm of laryngitis stridula is neither so acute nor so transient as that of laryngismus and can usually be allayed by the induction of vomiting. Ipecacuanha is the most useful emetic for the purpose, as its expectorant action is of value in the treatment of the accompanying laryngitis; drachm doses of the wine or five grains of the powdered root may be given every half hour to a child of two years of age until vomiting occurs. A combination of ipecacuanha and tartar emetic may act better than either drug alone, and Whitla recommends ten minims each of wine of antimony, wine of ipecac, and syrup of squill every fifteen minutes until vomiting occurs for a child one year old. When the spasms are severe amyl nitrate may be tried, or nitroglycerine, 1-500 grain every three hours, and sometimes belladonna is of value. For the rest the treatment is that of the laryngitis, the child being kept in bed in a warm, well ventilated room and the ipecac mixture continued every three hours after the cessation of the spasm. The dyspnea is likely to recur on the next few nights but with diminishing severity; if it lasts longer a nourishing diet and tonic treatment are indicated. Children subject to laryngeal spasm nearly always suffer from adenoids and these should be removed after the laryngitis has subsided. If the laryngitis grows worse and the dyspnea becomes continuous and severe one may be sure that edema is occurring or membrane forming in the larynx. An attempt should then be made to inspect the larynx, and this is frequently possible even in very small children, as a rapid glimpse is sufficient to show the swollen upper aperture or the whitish membranous deposit; failing this the part should be quickly palpated with the finger. If edema is present leeching may be tried, one or more being applied over the manubrium sterni rather than to the neck, so that the bleeding may be arrested, if necessary, by pressure. An icebag to the neck is hardly permissible in very young children, but may be applied with caution in older cases for not more than about three hours, and a spray of adrenalin may be used, but too much time must not be spent on these palliative measures, for children are quickly exhausted by dyspnea and collapse with great rapidity. If the upper aperture can be felt to be swollen it should be freely scarified with a guarded curved bistoury guided by the left forefinger on the affected part. This often gives rapid relief, but if it is insufficient, or if the swelling is out of reach in the subglottic region, tracheotomy or intubation must be performed without delay.

Infectious Diseases

Under the Charge of

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The Pathogenesis of Rickets.—Vaglio, (*La Pediatrica*, Sept., 1910), believes in the toxi-infectine theory of rickets. He believes the starting point of the infection in the majority of cases to be the intestinal tract. He believes in the teaching of Marfan that the bone changes are in keeping with what one might expect from a chronic irritation of the intestinal tract. Both Vaglio and Marfan believe that there is an intimate connection between the impaired function of the thyroid gland and rickets, (*British Medical Journal*, Dec. 24th, 1910). The reason why rickets is more common in the artificially fed is attributed by Vaglio to the fact that when milk is boiled the enyme which it contains and which is ultimately derived from the thyroid is destroyed by boiling. Vaglio has carried out experiments on thyroidectomized rabbits and finds the bone changes resulting sufficient to produce the predisposing condition which Marfan requires in conjunction with some chronic auto-intoxication to cause rickets.

This investigation points out more prominently the value of a clean milk which need not be boiled and the value of thyroid medication in rickets.

Examination of the Blood Serum of Idiots by The Wasserman Reaction.—The Wasserman test was applied to a number of children and young adults in an institution in Potsdam for idiots and imbeciles. The cases tested were idiots and imbeciles with a view to determining the part played by syphilis in these unfortunate cases. In 330 cases examined 15.4 per cent. gave positive reaction, among these seven definite signs of syphilis. In 287 cases of simple idiocy of all grades 44 were positive. In 14 cases of marked hydrocephalus four were positive. One case of epilepsy proved positive. Specimens of serum from the parents of ten children showing positive reaction were tested with the following results: Out of 13 parents tested nine gave positive reaction. One parent gave a positive reaction 16 years after the birth of the syphilitic child. This work, which was done by H. R. Dean, (*The American Journal of Medical Sciences*, Dec., 1910), shows the relation which exists between congenital syphilis and idiocy. This condition is frequently classified parasyphilitic condition and should be classed with the form of syphilis which manifests itself by toxic action on the central nervous system.

Hemophilia Treated by Transfusion.—Dr. Milton Hahn, Washington, D. C., gives an interesting description in the *Medical Record*, Oct. 8th

1910 of transfusion for hemophilia. The patient was an Italian, male, one year old. There was a history of hemophilia in the family, a brother having died from an operation for adenitis and a sister bled for 36 hours from a slight injury to the teeth.

The patient treated had never had any illness and had no previous hemorrhage. A week before admission to the hospital he fell against a chair and knocked out a tooth and bled continuously from the gum. On admission there was severe anemia, rapid respiration, rapid pulse and blood oozing from the cavity of the missing tooth. The rectum was filled with hard black fecal masses which proved to be blood clots.

Transfusion was performed by Dr. Charles E. Elsberg. The patient's father was the donor. The blood was allowed to flow for fifteen minutes and a wonderful transformation was observed. The waxen skin of the child became suffused with red glow. Towards the end the child became cyanotic on account of the injection of too much blood. The infant who had previously appeared lifeless regained consciousness and began to cry. The hemoglobin rose from 11 to 90 per cent. The coagulation time changed from 15 to seven minutes. The child remained in a semi-stupid condition for two or three days and then began to improve rapidly. Dr. Hahn says that the transfusion was performed as an emergency operation on a moribund patient and the result greatly exceeded his expectation. The hemorrhage which did not yield to any other treatment was immediately checked by the transfusion and the child made a rapid recovery.

The High Death Rate From Diphtheria in the United States.—The statistics from the department of health of several states indicate a much higher death rate from diphtheria than should exist. The statistics point to the fact that the death rate from diphtheria is much greater in the United States than in Paris. The failure to recognize the disease and the delay in using anti-toxin is the cause of the large number of deaths in the United States. Dr. Eben C. Hill, (*Medical Record*, April 1st. 1911), has gathered statistics which show that in 1908 the death rate from diphtheria in Paris was seven per 100,000 of population, while the death rate from diphtheria in the United States is four times as great. In New York City the rate is 1908 was 371 per 100,000 of population. Dr. Wilbur, Chief Statistician of Vital Statistics, United States Census, says that for the calendar year of 1909 the death rate from diphtheria per 100,000 for the registration will be 20.4, while in the whole of France for the year of 1907 the rate was only 9.3.

The failure to procure anti-toxin and the failure to use anti-toxin as an immimizing agent is assigned as the cause of higher rate in the United States. In Vermont, the rate for 1908 was 11.3, which is the lowest rate reported in this country. It must be confessed, as pointed out by Dr. Hill that many health boards fail to provide anti-toxin and many physicians fail to recognize the disease until death or recovery. The heart failure attributed to antitoxin is the heart failure of diphtheria toxin. The failure to give sufficiently large doses of anti-toxin is another serious fault to be met with. From a study of the subject it is evident that the health boards and the physicians in France have made more progress and more careful study of the diagnosis and treatment of diphtheria than has been done in the United States. There is, therefore, a needless waste of life from diphtheria in the large cities and country districts of the United States.

Dangers of Salvarsan from Syphilitic Infants.—Doblin gave salvarsan to six infants with no benefit in any instance. One strong child died from salvarsan poisoning, although the dose was only 0.03 gm. Four of the infants died, including two in good condition before the injection. The injection was made subcutaneous or intramuscular in each case and there was little local reaction at the spot. The necropsy findings suggest acute arsenical poisoning. Acute paralysis of the central nervous system, coma ,severe injury of the intestines with diarrhea, drop of the blood pressure and splanchinic paralysis were prominent symptoms. The edema in the mesenteric and subcutaneous fatty tissue was evidently the result of arsenic paralysis of the capillaries. The experiments performed indicate that 0.03 gm. may be regarded as the fatal doses for infants under the age of three months. It seems, therefore, that a much smaller dosage must be used on infants and that 0.01 gm. may be considered as the dose to be tolerated in cases under three months of age.—*Journal A. M. A.*, April 29, 1911.

Lumbar Puncture in the Diagnosis of Poliomyelitis.—Dr. Simon Flexner, replying to Dr. Edward E. Mayer, (*Journal of the American Medical Association*, October 15, 1910), advises lumbar puncture in doubtful cases suspected of being poliomyelitis, in order to arrive at the earliest possible diagnosis. Dr. Flexner calls attention to the frequency with which meningitis and poliomyelitis are confused and how frequently he has been called on to supply anti-meningitis serum for cases of anterior poliomyelitis in which meningeal irritation was an early and prominent feature. Dr. Flexner regards lumbar puncture as the one clinical method at present known for clearing up the diagnosis of typical cases of poliomyelitis. The early diagnosis is an important means of preventing the transmission of the disease by infection. Dr. Flexner regards lumbar puncture for diagnosis in poliomyelitis as a distinct advance in our diagnostic methods in the disease, serving also to clear up cases of a tubercular nature.

A New Sign of Inflammation of the Meninges.—Tenderness over the retro-mandibular point is regarded by Signorelli as a constant sign of meningitis, (*The American Journal of the Medical Sciences*, Jan., 1911). The point of tenderness is behind the superior extremity of the inferior maxilla below the lobe of the ear and in front of the mastoid process. In healthy individuals this point is sensitive, but in cases of meningitis pressure causes great pain and provokes contractions of the facial muscles. This sign is present throughout the attack. This sign can often be elicited before the stiffness of the neck and Kernig's sign. In tubercular meningitis pressure over the retro-mandibular point causes muscular contractions even when the patient is paralyzed and comatose.

Combined Quinine and Hydropathic Treatment of Whooping-Couth.—Zangger, (*British Medical Journal*), describes a method of treatment which has given satisfactory results in "several hundred" cases. It is based on what he considers to be the pathology of whooping-cough: "An infectious disease with a neurotic factor." To combat the infection he administers quinine in the form of a one to two per cent. solution of quinine hydrochloride in doses of two and one-half fluidrams (10 cc.), given at 8:00 A. M., 2:00 P. M. and 6:00 P. M., in severe cases also at 11:00 A. M. The one per cent. solution is easily administered, diluted with milk or water, to children under one year of age. For older children who object to the bitter taste he uses, instead, euquinine, administered in powders of two to four grains, three or four times daily. In treating the neurotic element he uses simple hydeopathic "packs," which have a sedative influence on the nervous system. They are applied as follows: Spread a child's blanket crossways over the bed, lay on it a sheet, once doubled, soaked in tepid water of 54 degrees (or even 52 degrees) to 60 degrees F., and well wrung out. Lay the patient on the sheet and wrap him in it; the wet pack must reach from the arm-pits to the knees, and be well covered by the blanket. The latter is fastened with safety pins, loosely enough so that the patient can sit up when a paroxysm comes on. The pack is applied at 6:00 or 7:00 P. M., renewed about 11:00 P. M., and left until morning. In cases where the cough is especially distressing later on in the night, it is applied at 9:00 or 10:00 P. M., and removed two or three hours later when the first convulsive whoops again supervene.

The results claimed with this form of treatment are as follows: Convulsive stage of whooping-cough shortened to from ten to twenty days in medium and severe cases. The number of attacks in 24 hours rarely exceeds 20, and is rapidly reduced to 16, 12, 10, 8, etc. The intensity of the attacks diminishes, also the disposition to vomit. The only complication observed in the author's case was bronchitis. Half a dozen cases which came under treatment with broncho-pneumonia as a complication rapidly recovered. The mortality was nil.

The quinine treatment was continued in half doses for several weeks after the convulsive stage in order to avoid relapses, and also as a general tonic.

Babinski's Sign in Diphtheria.—Rolleston, in the Review of Neurology and Psychiatry, discusses the question of the presence of Babinski's sign in diphtheria. His paper deals with a series of 877 cases of the disease in which the plantar reflex was investigated in the course of the last four years. In 172, or 19.6 per cent. of cases, an extensor response of the great toe, with extension or flexion of the other toes, was found to be present for varying periods. In 29 flexion alternated with extension, and in 676 the normal flexor response was obtained. In no case was there absence of any response. In no cas again was strychnine administered, as the occurrence of the sign after large doses of this drug has been noted. From the author's analysis of his cases he comes to the following conclusions: (1) Babinski's sign is found in a considerable percentage of all cases of diphtheria, the character of the response being rapid, deliberate, or intermediate in character; (2) the extensor response in this disease is not confined to infants, but may be obtained, though with decreasing frequency and duration, especially after the eighth year, until adult life; (3) it is essentially a phenomenon of the acute stage, in most cases being replaced by flexion in convalescence. Transition stages often exist in which various forms of response may be obtained; (4) the sign is not pathognomonic of diphtheria, since it occurs in other acute infections such as scarlet fever, typhoid, lobar pneumonia, etc., but it has a certain diagnostic value, since it is met with more frequently than in non-diphthertic angina; (5) it is more frequent and persistent in severe than in mild attacks of the disease, and its presence has therefore a certain prognostic value; (6) it is not associated with any special condition of the tendon jerks, and is never accompanied by ankle-clonus; and (7) it is probably due to a transitory perturbation of the pyramidal system by the circulating toxins, comparable to the slight degree of meningeal reaction which is a frequent occurrence in acute infections.

Diseases of the Skin and Uro-Genital System

Under the Charge of

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Rice in Acute Inflammatory Diseases of the Skin.—L. D. Buckley, (*Medical Record*, Jan. 28, 1911). The author has for the past five years used rice as the main article of diet for patients suffering from acute eczema, acute lichen planus, acute urticaria, dermatitis herpetiformis, and psoriasis with much congestion. Milk was avoided because of its large protein element. Coffee, tea, and chocolate were also omitted from the diet on account of their xanthin products. Rice, bread, butter and water were the only articles allowed. In a few days relief was generally quite marked. After five days a gradual return to a mixed diet may be made. The rice should be thoroughly cooked with water, butter and salt and eaten slowly, being freshly prepared for each meal. This low diet acts favorably on the vascular and nervous systems.

Gonorrheal Vulvo-Vaginitis.—Dr. Von Butzke, (*Dtsche. Med. Woch.* 1910, No. 32). Vulvo-vaginitis in children is nearly always due to the gonococcus, rarely to other causes such as uncleanliness, parasites, masturbation, trauma, constipation, etc. The infection in a majority of cases is carried by soiled bedding, by infected sponges or bath water, etc. The onset is rapid. During the first day at the entrance of the vagina there is an insignificant amount of discharge in which no gonococci are found. By the second day the vestibulum is red and swollen, and covered with pus in which many gonococic are to be found.

The treatment during the acute stage is rest in bed, a vulvo-vaginal pad held in place by a T-bandage, Sitz bath, and irrigations with tannic acid solutions. Later on protargol solutions are used, followed by iodoform suppositories of ten per cent. ichthyol tampons. In obstinate cases a ureteritis is commonly present, which is treated with diuretics, mineral waters and antiseptics which are secreted through the urine. In most of these cases there are short periods of abdominal pain and fever, that are best taken care of by rest, a Priessnitz compress and a stopping of all local treatment.

A cure is generally accomplished in from six to thirteen weeks; relapses are not observed by the author.

Treatment of a Syphilitic Infant by Administering "606" to the Nursing Mother.—A young woman, aged 19, suffering from syphilis was treated at the skin clinique at the University of Freiburg for specific skin eruptions and large masses of condyloma of the genitals. The Wasserman reaction was positive and spirochetes were numerous. She was confined on the 4th of July of an infant weighing 2400 grms., and having a wrinkled and somewhat shrivelled appearance. No specific symptoms manifested themselves until the 12th of July, when numerous bulle of pemphigus made their appearance, chiefly on the soles of the feet, and syphiltic onychie developed round the finger nails on each of the hands. Owing to the tendency of other specific symptoms to develop, it was decided to subject the nursing mother to treatment by "606." Accordingly injections of 0.3 g. of arsenobenzol in an aqueous solution were made in both buttocks. Characteristic reactions followed these injections, but on the third day there was commencing diminution of the size of, and of the discharge from, the condyloma of the mother, and disappearance of the spirochetes. On the tenth day the Wassernam reaction was still present. On the first and second day of the treatment of the mother there was an augmentation of the symptoms from which the child was suffering, but by the end of the third day further development was arrested, followed by a sudden attenuation of all the symptoms. By the fifth day the copper color of the skin was giving place to a more healthy tint. Disappearance of the onychie and of the pemphigus blebs followed, although there was still vissible some marginal scabs of the dried up vesicles. While at first the child was unwilling to sieze the nipple and cried continuously, it now emptied the breast at each repast. By the 29th of July the child weighed 3900 grms. and presented none of the specific symptoms. It would appear from the foregoing statement that the treatment of the mother by "606" was instrumental in curing the child, though no trace of the remedy could be discovered in the samples of the mother's milk which was carefully analyzed during the progress of the case.—*Munch. Med. Wochenschr.*, 1910, lvii. 1725.

Hypopituitarism.—Earnest S. Cross, M. D., (*New York Medical Journal*, October 15th, 1910). The writer considers that certain anomalies of growth connected with pituitary gland disease, the relations of which have so far been obscure, seem now to be in a fair way to be cleared up, thanks to the recent work which recognizes the pituitary as a secreting gland, liable to functional over-activity and under-activity, analogous to the conditions possible in the other ductless glands.

The work of various investigators shows (1) that removal of the posterior lobe causes very little bodily disturbance; (2) that the products of the posterior lobe possess diuretic and blood-pressure raising properties; (3) that the removal of the anterior lobe in experiments on animals causes a definite alteration in the structure and functions of various parts of the body, so that this portion of the gland seems chiefly to be associated with the metabolism of fat, the growth of the body, the sexual activities and to be bound up in some obscure way with the functions of all the other ductless glands.

This gives ground for believing in the possibility of the following theories:

1. That hypersecretion begun in fetal or early life leads to gigantism.

2. That later, when only circumferential increase in size of the bones is possible, it leads to acromegaly.

3. That defective secretion from an early period produces a peculiar lack of physical development associated with adiposity, and known as "dystrophia adiposo-genitalis."

4. Defective secretion developing in later life gives rise to varying clinical pictures of adiposity and genital atrophy.

The writer emphasizes the general infantilism so common in the third class, and cites the following case as an example of it:

P. Y., Family history unimportant. She was a premature child, but fat and healthy. Growth very slow; anterior fontanelle open till age of 16, at about which time second dentition also took place. Menstruation never established. General health excellent; bright, cheerful, but preferring the society of children. Physical examination showed the following abnormalities: Measure four feet two and one-half inches in h ight. Much adipose tissue all over the body, the breasts in particular being very large. Complete absence of hair in pubic and axillary regions. Teeth infantile, widely spaced in places, and crowded in others. Pelvic organs and external genitalia infantile. Beyond some immaturity, mentally normal.

A skiagram taken to determine, if possible, the condition of the pituitary body, showed the sella turcica of relatively small size.

Ringworm and Acne.—One usually gains some hints of practical value from a clinical lecture by Dr. Abraham, and his experience is supported by one recently delivered, (*The Clin. Journ.*, February, 1911, London). Speaking of ringworm, he says that in the majority of cases it can be cured within two to four months by the old-fashioned methods of applying germicides of various kinds, preferably in the form of ointments, which suit the greasy scalp better than watery lotions. The salve which he prefers is a five per cent, pyrogallic acid one, or one composed of sulphate of copper, two to four drs., one dr. each of carbolic and salicylic acids, and an ounce of lanoline and vaseline in equal parts. These should be well rubbed into the patches night and morning, and smeared on the scalp generally. The hair to be kept short, and a cheap cap—destroyed by burning every few days—worn. X-rays should be reserved for obstinate cases which will not yeild to such measures as those indicated, as with all precautions scarring and permanent baldness may ensue in some instances, while there may be recurrence of the ringworm. In acne there is probably something unhealthy about the tissues, so that the pus microbes or acne microbes, constantly present in them, evoke acne. While some cases of acne have cleared up like a charm under the new vaccine treatment, others have been made infinitely worse by it. Six of the most aggravated cases he had recently seen in private had had vaccine treatment from the best hands. It is still experimental and ought not to be indiscriminately used, or for mild examples, but reserved for bad cases which have resisted all other methods. He cites an instance where the patient, having only a few acne pustules, was submitted to the treatment by vaccines, and is now as much disfigured for life as if she had had bad confluent smallpox.

The opinion expressed by Abraham may, however, have to undergo modification when viewed in the light of the observations of Engman, (*Amer. Dermat. Assoc.*, 1910). He says: Little can be said in favor of staphylococcus vaccine in the treatment of acne vulgaris. Some of the cases improve to a certain extent, to remain at a standstill, but, in brief, its treatment by suspensions of acne bacillus has proven in our hands, since a proper technique has been adopted, the most brilliant agent we have seen in dermatology. There is only one drawback in these favorable cases, and that is, the lesions undergo such complete and rapid involution that deeper and more marked scars supervene. So by repeated large doses a mild case can be aggravated or converted into a severe one with large cystic lesions. Mild cases stand a larger dose than severe ones; in the latter continuous small doses give the best result. Full details as to dosage are laid down.

Surgical Diseases of Childhood

Under the Charge of

WILLIAM A. EDWARDS, A. M., M. D.

Professor of Pediatrics, University of California, Los Angeles, Cal.

Tendon Transplantation.—Dr. Charles N. Dowd presented a boy who was six and a half years old when he came to St. Mary's Hospital on May 18, 1905. Four years prior to that date he had fallen and injured his back, and for eighteen months subsequent to that injury he was unable to walk. At the time of his admission to the hospital there was marked atrophy of the extensor muscles of the left leg and thigh, and the left foot was inverted to such a degree that he hobbled about on its outer edge.

Operation: The tendon of the tibialis anticus was split, the division being carried well up among the muscle fibres. The posterior half of the tendon was left attached in its normal position, while the lower end of the other half was separated from its attachment, was carried outward and secured to one-half the tendon of the peroneus longus, which had also been split, but the displaced part was severed at its upper end.

The result of the transplantation was excellent, and the inversion of the foot had been practically corrected. Even without the aid of a short steel support, which the boy still wore, he was able to walk with entire comfort, and placed his foot squarely on the floor. Since nearly two years have elapsed since the operation, a fair trial has been given to the procedure.

Dr. Royal Whitman said that when tendon grafting was first introduced, it had been regarded by many as an actual cure for various deformities of the limbs, especially as the immediate results were usually very striking. Further experience, however, had demonstrated that partial relapse was the rule. He considered it as of comparatively limited value unless combined with other procedures, such as arthrodesis at the centres of deformity, or unless, as in the present case, a protective brace was worn.

The speaker also called attention to the importance of spliting a muscle high up and separating it completely into two parts if it were to act effectively as independent muscles.

Dr. Dowd said that in several cases where he had split the tibialis anticus he had found it a very satisfactory procedure, and that it was an excellent measure in helping to maintain the equipoise of the foot. He agreed with Dr. Whitman that a complete cure should not be looked for by tendon transplantation, and that some kind of a brace should be worn continually to help maintain the position. In this case it had certainly accomplished a great deal, since the boy placed his foot squarely on the floor and with the help of an inconspicuous "drop foot" brace he was able to walk with almost a normal gait.

Angiomata of the Left Loin and Leg.—Dr. E. I. Spriggs and Dr. J B. Molony, (*British Journal Diseases of Children*). The patient was a girl, aged four years. In the left loin there was an irregularly shaped tumor extending from the eighth rib to one and one-half inches below the anterior superior spine and from the mid-Poupart line to the level of the posterior superior iliac spine. It lay superficial to the muscles, and was of a soft, doughy consistence, giving no expansile pulsation or thrill. In the skin over the tumor were numerous small nevi. There was a similar but smaller tumor in the adductor region of the left thigh extending backwards towards the fold of the buttock. On the left leg there were five pigmented swellings along the internal saphena vein, each of the size of a hazel-nut, and a small non-pigmented mass on the inner surface of the left foot. There were also numerous small nevi scattered over the back in a more or less symmetrical arrangement. The condition was present at birth. Except for enlarged inguinal glands on both sides the child showed no signs of other abnormalities.

Palpable Arteries in Children.—In the *Munchener Medizinsche Wochenschrift*, Dr. Hamburger draws attention to a curious phenomenon he has observed in children. Under normal conditions the walls of the superficial arteries such as the radial or temporal, cannot be felt on palpation; one only feels the pulse, that is, the contraction of the artery, but not the arterial wall itself. In certain cases, however, the author states that he has been able definitely to the walls of the temporal and radial arteries and to convince himself of a certain degree of rigidity of the walls. He is of opinion that this rigidity is in no way of the nature of an arterio-sclerosis, but of a spasmodic kind, as it is very variable and may be accentuated at one moment and disappear entirely the next. He suggests that it arises from a certain tonicity of the vascular musculature and is a manifestation of a general neurotic or neurasthenic condition. Most of the cases were children of an irritable temperament, complaining frequently of headaches, palpitations, and the like. Other evidences of an exaggerated vaso-moto irritability were generally present; sudden flushing or pallor of the face, cold extremities, frequent sweatings, dermographism and irregular respiratory pulse.—*The London Hospital Journal.*

Appendicitis in Childhood.—In a paper based on the analysis of 500 cases, H. C. Deaver, Philadelphia, (*Journal A M. A* , December 24), insists on the importance and frequency of appendicitis in childhood. The number of cases increases in frequency with age from birth to puberty, and it is more common in males. The course is more often severe than in adults. There is less tendency to formation of strictures, but fecal concretions are more frequent. As predisposing causes he mentions enteric fever, intestinal catarrh and influenza, but other infections and nasopharyngeal trouble are hardly to be considered as etiologic factors. The symptoms in infants are often scanty, irregular and misleading, and the disease is more frequent than the statistics show. In older children acute attacks occur suddenly with stormy symptoms even more frequently than in adults. Chronic appendicitis indicates a focus of chronic auto-toxemia with all its bad results. He believes that all cases of abdominal trouble in children should be considered appendicitis until proved otherwise. The differentiation should be made with intestinal catarrh or worms, right-sided pneumonia or sacroiliac disease, torsion or ovarian cysts, mesenteric cysts, cystitis and rectal abscess. With early diagnosis and operation the prognosis is favorable, but it rapidly becomes worse after twenty-four hours. In chronic appendicitis an acute attack with perforation is always to be feared. In intra-appendiceal appendicitis complete removal of the appendix and the diseased surroundings is advised. Non-operative treatment is indicated in localized abscess with diffuse peritonitis. Opium and purgatives are absolutely contra-indicated. Operation is even more suitable to children than to adults and post-operative treatment is very important. The Fowler position must not be kept up for more than 36 hours in drainage cases, lest intestinal obstruction be set up. The symptoms of obstruction are sudden severe pain, becoming paroxysmal and by a nausea, spitting up and vomiting. Later symptoms result from toxic peritonitis. The temperature and pulse are of little significance. With numerous adhesions ileocolostomy is the best procedure. Secondary abscess must be watched for. Its presence is revealed by a rise and continued high temperature, with a high leucocyte count and local signs. Contagious diseases should be recognized at once. Drainage is to be employed only when the exudate is purulent or profuse. It produces adhesions and predisposes to intestinal obstruction. A wet dressing is the best for absorption. A tabulated statement is given of his cases.

Spina Bifida.—Dr. W. S. MacDonald, (*Journ. Mich. S. M. S.*, Feb., 1911), advises that the operation for the radical cure of spina bifida should be undertaken in all cases where there is promise of relief from the unsightly deformity, even if improvement from the existing paralysis does not appear probable. Excision of the sac can be done successfully during the early months under conditions where the pedicle is not too broad, as the operation is here accompanied by little shock. Sacs with broad pedicles are best suited for operation when the child has attained the age of two years or older. The older the patient, the better promise of success; for the shock is less as is also the danger of infection from bowel discharges. Any attempt at closure of the bony cleft is useless, for the reason that it increases the danger of shock and is rarely, if ever, successful. Recurrence of the hernia is not the rule, provided there is no blocking of the circulation of the cerebro-spinal fluid. This field in neurological surgery has been a very much neglected one, and is deserving of more attention on the part of the surgeon than is often manifested.

Convulsions After Orthopedic Operations.—About a year ago Dr. Schanz drew attention to the fact that convulsive fits are liable to follow orthopedic operations, especially in young children, which may prove fatal. The hypothesis offered to explain these convulsions was that they were due to fatty emboli caused by the liberation of fat from the bone marrow into the general circulation. On this hypothesis Dr. Schanz proposed to treat the condition by intravenous and subcutaneous injections of saline solution. In a recent communication to the *Deutsche Medizinsche Wochenschrift*, Dr. Codivilla puts forward a different explanation of the phenomenon. He has observed nine cases of the condition, and he attributes the convulsions to the excessive tension to which the soft parts of the extremities, including the nerve trunks, are subjected in consequence of the traction often necessary to correct the deformity. Reflexly, this tension of the nerve trunk sets up a condition of excitation in the central nervous system which finds expression in the convulsions. This hypothesis receives confirmation from the experimental research of Dr. Neri. He has been able to produce sudden attacks of convulsions in animals by exercising strong traction on the soft parts of one or both of the lower extremities. In cases in which traction is applied to both limbs the convulsive phenomena are much more frequent and more severe. According to Dr. Codivilla these convulsions are more likely to occur in patients with some neurotic taint, or predisposed to epileptic attacks. From a therapeutic point of view Dr. Schanz's method of treatment with saline injections would appear irrational according to this latest causal theory, although Dr. Codivilla suggests that an increase in the volume of blood might assist the nerve centres by increasing the nutrition and organic changes of the tissues, but he thinks the most important principle of treatment consists in relieving at once the tension and traction on the tissues. He suggests further that in cases in which there is some neurotic taint or liability to epilepsy, any manipulation should be preceded by a course of bromide, and that any extension or traction of the soft parts that may be necessary should be carried out gradually.—*The Hospital.*

Cystic Sarcoma of the Kidney in an Infant.—Dr. George Woolsey showed a speciman which he had removed in February, 1907, from an infant four months old. At the time of its removal, it was larger than the child's head. It had first been noticed about a month after birth, and steadily increased in size until it filled about one-half of the abdomen, especially on the left side. It gave rise to no urinary symptoms, and it was not until shortly before the time of operation that symptoms from pressure on the thoracic organs became marked.

Its removal was accomplished without much difficulty except for its adhesion to the peritoneum below the transverse mesocolon, which was torn. It was found to consist of the left kidney, or its posterior half, from the front of which extended the tumor which was entirely cystic. Many of the superficial cysts had been ruptured during the removal. A pathological examination of the tumor, made by Dr. James Ewing, showed that it contained both sarcomatous and epithelial elements. He found none of the striped muscle tissue that was sometimes present in these mixed tumors (embryomata). The patient died of shock on the day of the operation.

BOOK REVIEW

Gonorrhea in the Male. A practical guide to its treatment, by Abr. L. Wolbrast, M. D. Consulting Genitourinary Surgeon, Peoples' Hospital, West Side German Dispensary and Beth Isreal Hospital Dispensary: Professor of Genitourinary Diseases, New York School of Clinical Medicine; Member American Urological Association. International Journal of Surgery Co., 100 William Street, N. Y., 1911.

This little volume is the outcome of a series of articles on gonorrhea, which have appeared in the International Journal of Surgery. The author has but one purpose in presenting this little volume, and that is to present the subject of gonorrhea in such a plain and unmistakable manner, that the general practitioner can thoroughly realize his duty in handling such cases; and to present for his consideration the latest and best methods of treating patients suffering from this disease. He believes that considerable damage has been, and is being , done by the prevalent methodsof treating gonorrhea, particularly that the remedies as used, are too strong and being used with a vigor that is far too heroic for delicate and inflamed tissues. The author begs for more gentleness and conservatism in our therapy, not only as to the drugs we employ but as to the instruments we use. The reader will find that this little book is not a rehash of other books that have been written in the past, but the subject matter is based entirely upon the large general experience of the author. Differential diagnosis is given a prominent position in the text, and with the author, we believe that a correct diagnosis is more than half the battle. The treatment outlined is based on the most modern practice, which is absolutely up-to-date in every particular.

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PEDIATRICS

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EDITORIAL

INFANT FEEDING.

With the advance of civilization and with the ever growing tendency of people to flock into towns and cities, the problem of infant feeding has become more and more difficult to successfully solve. Unfortunately, too, there is an increasing disposition on the part of mothers of all classes to feed their children artificially; for long this has been the custom with the rich mothers of the whole country. Now the well to do and it may, perhaps, almost be said American born mothers of every walk of life are abandoning the natural practice of nourishing their babies at the breast, while a goodly proportion of the foreign born population are following in their footsteps.

At the meeting of the Pediatric Section of the New York Academy of Medicine, held on May 11 last and reported in another part of this issue, the question of the milk supply was discussed from various standpoints and much valuable information was given on the subject.

The subject of infant feeding was dealt with by all the latest speakers and it was somewhat curious to remark the lack of unanimity of opinion as to the best point of artificial feeding for infants and to note that little advance, in this direction, appears to have been made within recent years.

The modes in which cow's milk is modified seems to swing backwards and forwards. At one time, the German methods of feeding infants are ignored or even condemned, at another time these methods are extolled. Sometimes an authority will state that there is too much fat in a certain modification of milk, while another will say that there is not enough, opinions as to the amount of sugar in a modified milk for infant consumption differ, and so on and so on.

All physicians, however, experienced in the feeding of babies are of one mind, that raw milk is not a suitable food. In the first place, it must always be borne in mind that a point which in particular differentiates mother's milk from cow's milk over and above the question of its digestibility is, that mother's milk is practically a stenile fluid when it leaves the breast, but the same cannot be said of cow's milk. Cow's milk not only contains organisms which cause milk to become sour, but not infrequently the germs of disease. The reason that for infants it is of especial importance that the milk should be pure, is because the low degree of acidity which is characteristic of an infant's stomach enables these germs to pass on almost unaffected into the intestines, where they may readily become the seeds of disease. Therefore, if cow's milk is to be employed to feed an infant, the first and essential step is to procure as pure a milk as possible. But as an uncontaminated milk cannot be obtained in a city except at a high cost, it has been found necessary to use means to destroy the hurtful germs that may be present. Pasteurization has been generally adopted because this method is said to injure the nutritive properties of milk but little, if at all. Into the merits of the very numerous methods of modifying milk, it would be impossible to enter within the limits of an editorial article, suffice it to say, that very frequently the personal equation balks largely in selecting a suitable form of modification. Some infants are more tolerant of fat than others and some assimilate sugar with greater ease.

This statement may be made with emphasis, that an infant requires a certain amount of fat and is likely to suffer more seriously from a deficiency than from a superfluity. It is better for the baby to suffer from some degree of intestinal disturbance than to become rickety. In the successful rearing of an infant, much depends on the personal equation, that is to say the selection must be made as to a milk most easily assimilated and perhaps as much depends on the manner of feeding. As said before, it is impossible to lay down hard and fast rules with regard to modifying milk, but it is not impossible to regulate the quality of food and the time of feeding. These points should be strictly attended to both in the case of breast fed and artificially fed infants. With respect to artificial foods other than cow's milk, many of them are valuable adjuvants to the successful feeding of infants and children. Condensed milk is very largely used as an infant's food in the big cities of this country and no doubt, is used to a considerable extent in Great Britain; except as a change perhaps, in some instance, the employment of condensed milk is condemned by physicians. Babies fed on it may look fleshy but they are pale and flabby and frequently suffer from rickets. Proprietary foods, as a rule, should be prescribed with due care for the particular case. Many contain unaltered starch, many are poor in fat and there is often a deficiency of proteids in them.

In the course of the remarks made by Dr. Emmett Holt at the meeting referred to above, he drew attention to the seeming anomaly that in London with a notoriously unsatisfactory milk supply, the rate of infant mortality was less than in Boston and Chicago, both of which cities have a fairly good milk supply. No doubt the weather is a factor in the larger infantile death rate in the American cities but there are other factors to be considered. Within the past few years in every poor district of London, schools for poor mothers have sprung up, modelled after those of France and Belgium, in which parturient mothers are fed and after being confined are cared for and fed for two or three months after the birth of the child. The chief feature of these schools is that the mother is urged to feed her child at the breast and is generally instructed in the best methods of rearing a child. The crusade in Great Britain against infant mortality is aimed at artificial feeding and not so much in encouragement of pasteurization. The merits and need of pasteurization are allowed, but it is argued that the most important procedure, by far, is to induce all mothers, who are able, to suckle their own children.

No matter how skilfully milk may be modified, no matter how near in its constituency it may be brought to resemble human milk, there is a subtle difference which no modification has been able to overcome. This difference probably depends upon some qualitative differences in the composition of the two kinds. The practice followed in European cities of feeding poor mothers and infants and of instructing the mothers how best to rear their children has been attended with satisfactory results, and is worthy of a trial in the larger American cities.

CHILDREN AND ROENTGEN RAY DIAGNOSIS.

In this issue are two valuable papers on the value of X-ray in the diagnosis of fractures in children to which we ask our readers' attention.

The value of this method of diagnosis, based upon the discovery of the X-rays, is now universally accepted. Few medical men would venture to gainsay the proposition that in many cases it furnishes the physician, hardly less than the surgeon, with information unobtainable by any other means. With the growth of experience, moreover, it is constantly disclosing fresh facts suggesting fields fraught with future possibilities. Rotch of Boston has written a valuable work upon this subject which should be in the hands of every physician interested in this subject. So far as the method applies to children, it is evident that the particular conditions yield results and promises of results that cannot be obtained from adults; at any rate, in the present stage of evolution of the "black art" of skiagraphy. It is hardly necessary to allude to the purely objective nature of the process, a consideration of first importance in dealing with infants. A train of otherwise inexplicable symptoms may be accounted for by the discovery of an unsuspected coin lodged in the gullet of a baby. As a matter of pure diagnosis as a rare and more or less obscure pathological condition in older children, we may instance coxa vera, the existence of which can hardly be determined with any degree of certainty without the assistance of the X-ray tube. Then there is a wide range of usefulness awaiting the method of dealing with various epiphyseal maladies. At a recent Edinburgh meeting of the British Medical Association, for instance, was shown a Roentgen ray photograph of the hand of a young person where some of the epiphyses were altogether and others partially destroyed as the result of a frost-bite. Indeed, it would not be difficult to fill a volume with an account of the pathological conditions upon which the Roentgen methods have thrown new light. For various reasons, not yet perfectly understood, better photographic results are often met with in children as regards the soft tissues. Thus, under proper conditions, a fairly perfect picture may be secured in the intestines, a region which in adults still resists the efforts of the Roentgen operator. Nevertheless, the fact that such a record is feasible in young subjects brings the photograph of the living human adult bowel within the reach of scientific investigation. Apart from such considerations, however, there can be no question that a full Roentgen ray installation is essential to every children's hospital, if only for the purpose of every-day clinical examination and diagnosis. In several institutions of the kind the work has hitherto been entrusted to a photographer or an electrician, with results that have been doubtless satisfactory, so far as concerns the mere photographs. The excellence of a photographic record, however, may be stated broadly to be a matter of minor importance, for a surgeon can, as a rule, learn all that he wants from a roughly and rapidly executed photograph. Then again, one should remember that the use of the fluorescent screen will often do away with the need of a permanent photographic record. On the other hand, for the intelligent handling of the screen and adjustment of the focus tube to carrying relations of hard and soft tissues of the human body it seems obvious enough that a good knowledge of anatomy is requisite on the part of the operator. Hardly less desirable is a sound acquaintance with the ordinary facts of coarse pathological anatomy, a knowledge which will become more and more necessary as the Roentgen ray photography of the soft tissues becomes more perfect. It is evident that these two branches of special attainment are to be looked for in medical men only, so that if the foregoing predisposition be accepted, it follows that we must turn to that class for our Roentgen ray operators. The medical man can readily learn enough of photography and electricity to serve his purpose, whereas it would be hopeless for the ordinary photographer or electrician to hope to master such highly technical subjects as human anatomy and pathology. Besides, the medical man is already trained for scientific observation and is therefore more likely than a less highly and specially qualified operator to arrive at general conclusions and to appreciate at their just value the enormous mass of clinical facts that are accumulating in this new sphere of professional labor. It is possible, though hardly probable, that some practical therapeutic value may one day be found for the focus-tube ray, which are by no means synonymous with the X-rays of Roentgen. So far as they have received any such limited application at present, as, for example, in the treatment of lupus or of hirsuties it has been conclusively shown that the results are not sufficiently within control to avoid dangerous complications, and further that they possess no distinct advantages over ordinary methods. As to the wider future of the Roentgen rays in medical work, there can be no doubt that before many years have elapsed great advances will be made in the simplification and availability of a process that at present must be regarded as not a little costly, complicated, and cumbersome.

CONTAMINATED ARTIFICIAL FOOD A FACTOR IN THE CAUSATION OF CHOLERA INFANTUM AND THE MEANS OF PREVENTION.

According to L. Emmett Holt, in 2,000 cases of deaths amongst children from summer diarrhea, it was proved on investigation that only three per cent. were breast fed, revealing a most extraordinary immunity amongst infants nursed by their mothers. Dr. Niven, of Manchester, published statistics of infant diarrhea in the summer of 1896 in that city. Out of 500 deaths, only fifteen were being breast fed when taken ill. The relative chance of dying from diarrhea of hand fed, as compared with breast fed children, was as eight to one under one month old, 95 to one at one month, 125 to one at four months. These figures coincide with those of Dr. Holt, viz., 97 per cent., while Minert, of Bavaria, finds the rate in his country to be 96 per cent. The treatment of summer diarrhea in infants is much too lengthy a subject to be dealt with in the editorial pages of a journal, more especially as the opinions of various authorities with respect to the most suitable therapeutic remedies differ somewhat widely. Most practical physicians, however, agree that in severe cases lavage is promptly indicated, and it may also be said that, whenever possible, change of air is of the utmost benefit. Indeed, the removal of the little patient from the crowded town to the quiet, healthy country, has frequently had an effect almost magical. But when all has been said, there can be no doubt that the aim of medical men should be to endeavor to check, and even to stamp out the disease. The first steps towards this most desirable end should be in the direction of feeding the infant properly, and when breast milk is not procurable, to obtain as near a substitute as is within reach. Referring to this phase of the matter, Dr. Jacobi says: "Cow's milk will always be one of the foods administered at any age. In the country, when the cattle are not tuberculous, and when no diphtheria, scarlatina and typhoid fever can vitiate the milk, it should be given fresh, modified by the addition of barley or oatmeal water. City milk is no longer fresh. Boiling, sterilization and pasteurization is therefore indispensable, partly to destroy the offending bacteria partly to render inocuous such pathogenous germs as may have been admitted during the long time which elapsed between milking and consuming." Dr. Ashby speaking on this point says: "A greater card of the health cleanliness of the cows, a rapid cooling of the milk to a temperature of 40 F., and maintenance of this temperature during the conveyance of the milk from the cow to the consumer, must be reckoned among the most important measures of prophylaxis. After the question of procuring milk in a fit state to be nourishing food for the infant comes the almost as important one of domestic hygiene. In fact these are so inextricably bound together that they may be considered identical. It is of no use to obtain milk free from germs, if after so doing, it is allowed to become contaminated when in the house. Therefore cleanliness is a *sine qua non*, if disease is to be warded-off. A proper feeding bottle is also a necessity. Such a one, according to Langford Symes, should have no tubes, no angles, no indentations on glass, a wide mouth. It should be of transparent glass, easily cleansed, about eight ounces in size, and impossible to be used by the child alone. In the houses of the rich and well-to-do, it is easy to fulfill all the conditions necessary to an effective state of hygiene; but with the poor unfortunately the case is very different. There can be no doubt, however, that even with them, matters might be very considerably improved if they were instructed how to proceed to render their homes more healthful. The suggestion has been made, and is, we believe, in force in some cities, that the municipal authorities, or the Health Board should, at the coming of the summer, cause to be distributed amongst the dwellers of the slums, printed notices advising them on some points in regard to domestic hygiene which are within their power to carry out, and which do much to neutralize the effect of the disease-spreading germs. More careful scavenging, and more scrupulous domestic cleanliness, together with stricter supervision of dairy farms, and of milk as sold in shops are the means at our disposal for combating the summer diarrhea of children. Much can be effected, too, by city authorities, in the way of public parks, bath houses, and by tearing down old unsanitary dwellings, and erecting in their stead buildings well-lighted and ventilated, and supplied with up-to-date hygienic arrangements. It should be a war against dirt, waged by the individual, as well as the body corporate."

PEDIATRICS

ORIGINAL ARTICLES

A FEW PRACTICAL APPLICATIONS OF RADIOGRAPHY IN PEDIATRICS.*

BY

CHARLES EASTMOND, A. B., M. D.
Brooklyn, N. Y.

The use of the Roentgen ray in pediatrics is essentially the application of this agent in general medical and surgical diagnosis. The general outline of the field has been presented so many times that I shall not inflict that upon you, but I shall mention only those conditions which are frequently seen in children, the recognition of which is of importance, in fact, absolutely necessary. First and foremost is the question of foreign bodies. The tendency of children to place in the mouth whatever small object that may be lying around makes great the liability of swallowing or inhaling foreign bodies. However, I do not believe that it is necessary to subject every child suspected of swallowing some small object which may have been mislaid, to an X-ray examination. I would divide the cases in this way:

A lost object—a small child—the sudden development of pulmonary symptoms without special cause; or difficulty in swallowing, with or without regurgitation. Under these conditions an examination is absolutely imperative. The importance of this may be recognized by mentioning the case of Dr. Arrowsmith and reported by him, in which a collar button rested for over six months without recognition in the oesophagus of a girl, although the history was very suspicious. At operation, the button was found encysted, but the child was so weak from inanition that she died on the operating table before it could be removed. At the post-mortem it was with the greatest difficulty that it could be cut out. Such a state of affairs is, in the present day, no less than a crime.

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*Read before the Section in Pediatrics of the Kings County Medical Society, Apr. 26, 1911.

Where no symptoms are present or present to a slight degree, it is optional whether an examination be made or not, but the option should rest with the parents and the risk theirs—not the physician's.

At least, a painless and safe means is at hand to settle the question beyond doubt. Because a coin does not appear in the stool within a couple of days, does not signify that none has been swallowed. I saw a boy who gave a history of swallowing a coin which after two weeks was still present in the intestines. No obstructive symptoms were present, and a second examination two weeks later showed its absence, although missed in the dejecta.

I fully recognize the value of the oesophagoscope, but its use is infinitely more severe than that of the Roentgen ray, and I do not believe it possesses any advantages of its own, except that the foreign body, if present, may be removed at the time of examination. If, however, no foreign body is present, its use would seem to be an unnecessary punishment.

Another way that foreign bodies may be present in the body, is where a drainage tube has slipped into the chest through an empyema wound. It is surprising how frequently this occurs, even amid the best and most careful surroundings. An empyema wound which heals, then breaks out, heals again and breaks out again, with but a small sinus should be investigated for possible foreign body or necrotic rib.

Next in importance comes fractures.

The proper reduction in all fractures is important, but when occurring about a joint, it is especially so. By a strange fatality, fractures in children occur most frequently about the elbow—or at least they have in my experience, the dia-condylar and supra condyloid being most common. The difficulty of making a satisfactory examination of the part in the presence of much swelling or in an intractible child—I might almost say, in the average child, together with the importance of satisfactory reduction in view of future function, makes an X-ray of these fractures almost necessary. The public is too well informed today to excuse the man who leaves his patient with an elbow permanently stiff or with markedly reduced function.

Only last summer I saw the son of wealthy parents in whom a dia-condylar fracture of the humerous had existed unreduced and unrecognized for over two weeks, with the lower limit of the upper fragment resting on the ulna. An open operation was necessary to secure any form of reduction.

There is in Brooklyn today, a young man with a stiff elbow who had received an injury which was diagnosed as a fracture of the lower part of the humerous, when the true condition was a posterior dislocation of the radius and ulna with a fracture of the coronoid process. He has now an elbow that is but of slight service to him.

The whole range of bone diseases—whether due to congenital defects or mal-development or the result of infection in one form or another, offers not only the broadest field for interesting study, but also presents diagnostic questions of the greatest importance to the patient. How important is the recognition of an early tubercular lesion in a joint or bone? or the differentiation of a benign lesion from an osteo-sarcoma?

There is absolutely no form of disease affecting osseous structure, no matter how slight in degree that will not be apparent on an up-to-date X-ray plate. However, to secure this, the finest possible detail of structure must be obtained, and one must be an expert to recognize the lesions and be able to make the differentiation.

I am constantly seeing joints in children on whom the diagnosis of rheumatism or some similar condition has been made when the plate reveals a tubercular process, often with marked destruction. Valuable time is lost, and the disease is permitted to reach an advanced stage, sometimes almost a hopeless one, when an early diagnosis was possible and the terminal result on the child might have been different.

In this connection must be mentioned the work of Rotch of Boston in the study of epiphyseal development in children and a determination of the body development, not by years and months, but by the degree of ossification present in the bones of an extremity. This has proven in Boston the basis of child study in regard to factory laws and the best measures to be adopted in the care of backward children. According to Rotch, a child of certain age with delayed development of the osseous centers is not to be classed with a child of the same age, but with normal development. In other words, the degree of development of the osseous centers is a positive index of the degree of mental and physical development.

Pathological changes in the chest—of the heart, lungs and mediastinal spaces—disease and new growths, need but to be mentioned. But when in doubt, why not give the patient the advantage of an early diagnosis?

Last January I read a paper before the Associated Physicians of Long Island on "Anomalies of the Colon as Demonstrated by the X-Ray." The conditions presented were in adults. Since then it has been my privilege to have seen several children in whom developmental defects—failure of complete rotation or migration of the gut, infantile sigmoids, unusual loops with long mesentery, and angulations were found. All of these patients suffered from constipation—in all were conditions tending to produce stasis and in some acute symptoms were present. This presents a field of study to which a whole evening might be devoted. Our conclusions are not yet proven, but I may say that facts and material are being accumulated for later presentation to demonstrate that many cases, at least, of epilepsy, and neurasthenia are dependent upon the effects obtaining from definite obstructive conditions in the large bowel. We have proven that some cases of epilepsy have a definite discoverable entity behind them, but the proportion of such cases has yet to be determined.

Dentists appreciate the importance of unerupted and impacted teeth as an etiological factor in the production of neuralgia and various nervous manifestations, but the medical profession has been slow to take this subject up. Dr. Upson of Cleveland has recently published an article on the relation between certain nervous disorders and undiscovered dental defects which is well worth perusal, and has presented the subject in such a way that it is worthy of investigation.

The field of radiography has not been fully presented, but merely skimmed over, mentioning only the points which are of especial interest.

It is not my intention to convey the idea or express the opinion that the Roentgen method of examination is sufficient unto itself or to declare that it either supplants or eliminates clinical investigation. Far from it! Rather, we are all to work together, and utilize the X-ray as an adjunct. But the claim of this method is that the pathological processes which may be only suspected from external examination are clearly revealed with certainty, and that an early diagnosis may save years of suffering and disability.

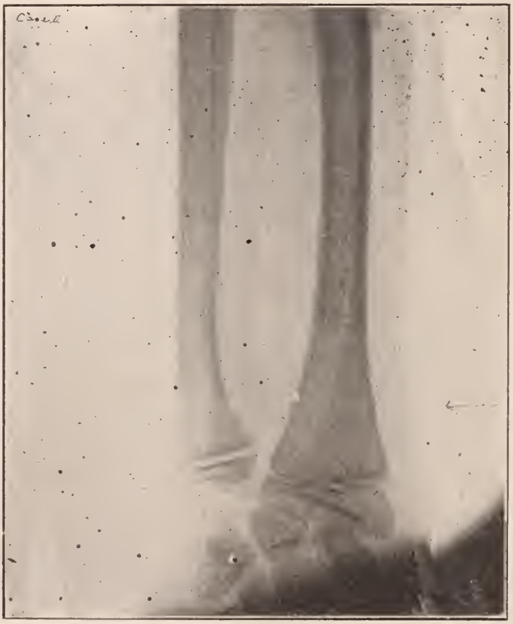
THE IMPORTANCE OF THE X-RAY IN THE DIAGNOSIS OF OBSCURE FRACTURES IN CHILDREN.*

BY

WM. PEARCE COUES, M. D.

Boston, Mass

Particularly interested in this subject will be the pediatrist, the general practitioner and the surgeon who makes a specialty of children's surgery, or at least sees many children in his hospital and private practice. The discovery of the X-ray was such an epoch making event in all that appertained to the diagnosis of fracturesas can hardly be over estimated. It is the fashion at present for some surgeons to belittle the value of the X-ray in the diagnosis of fractures. The certainty in diagnosis made



CASE II.
Sub-periostal Fracture of Lower end of Radius (Antero posterior lateral view).

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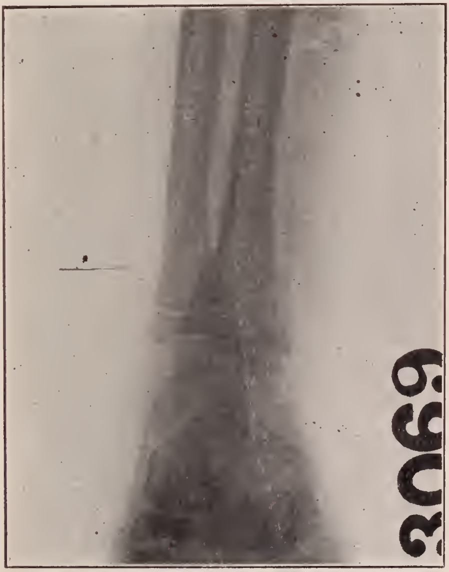
*Read at a meeting of the New England Pediatric Society, May 13, 1911.

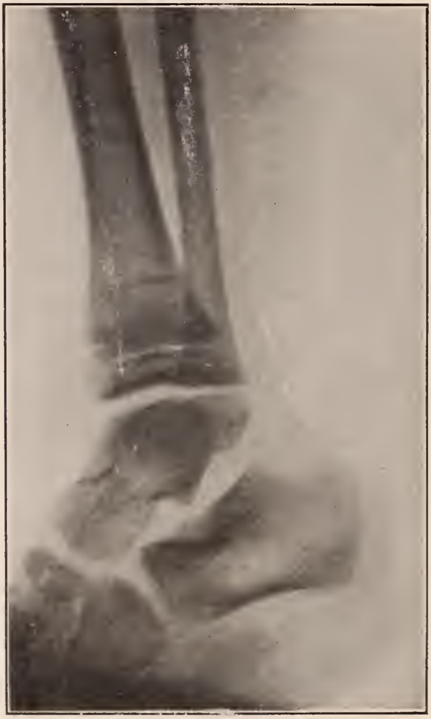
possible by a good radiograph, has undoubtedly made some careless in their diagnosis by the older and long fixed methods. At the same time, it must be remembered that there are certain types of fracture which occur more especially in children in which the diagnosis is sometimes impossible without the X-ray. That careless physical examinations are made, on account of the certitude of the X-ray diagnosis to be had afterwards, is unfortunate; but we cannot justly blame the X-ray for this. Rather, it should stimulate to more careful and painstaking diagnosis with such a check on one's powers of observation by the ordinary methods.



Sub-periostal Fracture of lower end of Radius (lateral view).

I have paid special attention to the diagnosis of these obscure fractures in my clinic at the Boston Dispensary, of late. In this short paper, I will confine myself to the commoner kinds of unrecognized fracture which are more important than the rare cases of epiphyseal fracture. It is in the questionable cases of fracture in children that the X-ray perhaps shows to the greatest advantage. One reason being, that many children are brought to the surgeon with a diagnosis of sprain or bruise, and obscure types of fracture are commonest in children. Children cannot give a dependable history of their injuries. Often they will be alone or playing with other children when the sometimes trivial fall or other injury leading to the fracture happens.

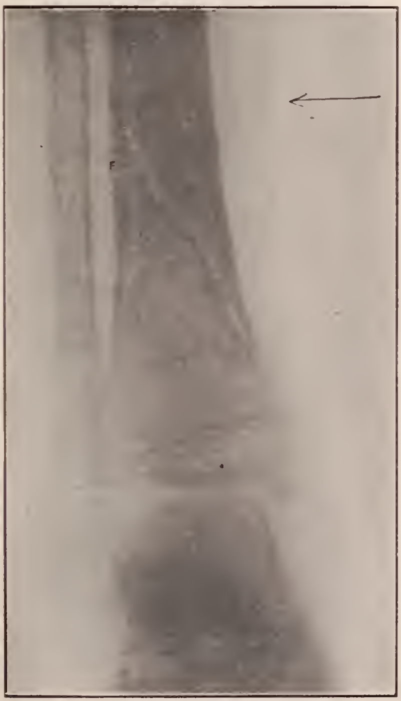
It has been repeatedly demonstrated that certain fractures in children will be perfectly shown by a good X-ray plate when the most searching and careful examination by an expert will not always enable him to say positively, "There is a fracture here." He can only say, "I think there is a fracture here."



Transverse Linear Fracture of Tibia.

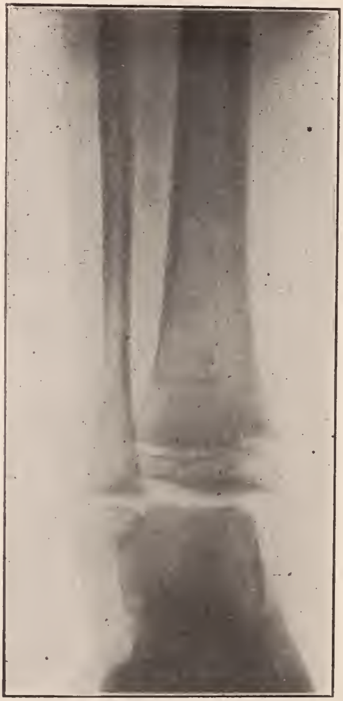
Hennig and Lowenstein were the first to call attention to the sub-periosteal variety of fracture, which is one of the types of obscure, and often unrecognized fracture, commonly seen in children. Here the bone may be cracked in a variety of ways, but the crack does not extend through the periosteum. This is often pushed up, and appears like a blister in the X-ray.

Granting the common occurrence and difficulty of diagnosis in the case of these linear cracks and sub-periosteal fractures in children, and that before the X-ray they were regarded as sprains and bruises, as were also many fractures in adults, what is the reason for laying stress on the importance of their recognition; in other words, what harm do they do? As regards the importance of their recognition, whether harm results from their presence or not, scientific accuracy demands that they be recognized and recorded when this is possible.



Spiral Fracture of Tibia with Linear Fracture Above.

In the long cracks that occur in the bones of the lower extremities, harm may result in weight bearing, spreading of the fracture, and subsequent static deformity, if the parts are not immobolized. Fragments may break through the periosteum, excessive callus may form, and cause trouble. A few cases of sarcoma of bone have been recorded arising almost immediately after fracture. Who knows but that there may not be more likelihood of such a dread occurrence in a child whose obscure fracture has remained unrecognized until a large callus calls the physician's attention to it. Children, the subjects of these fractures, often complain of surprisingly little pain; often there is practically no disability. There is no crepitus in the subperiosteal form. When we consider the lack of definite signs of fracture in these obscure cases and know that a good X-ray picture will settle the question, he who neglects to have one when it is possible, is not doing his full duty towards his patient.



Transverse Linear Fracture of Tibia (Antero-posterior view).

CAMPHOR INJECTIONS IN PNEUMONIA IN CHILDREN WITH REPORT OF FOURTEEN CASES.

BY

LOUIS FISCHER, M. D. and **M. J. SIEGELSTEIN, M. D.**
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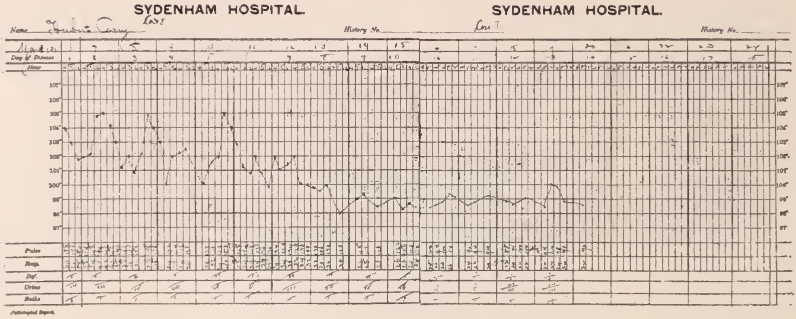
Seibert in the *Munchener Medicinische Wochenschrift*, No. 36, 1909, reports the results of camphor injections in Pneumonia in 21 cases. Most of his cases improved under large doses of camphor (12 cc. of 20 per cent. emulsion b.i.d.) The pulse, respiration and temperature improved day by day until the disease gradually fell by lysis. His youngest patient was four years of age.

Having been stimulated by the report of such excellent results, it was decided to employ the injections of camphor in a series of about 14 cases, in children in pneumonia of either the lobar or lobular types. The following are the reports of each case in which the drug was used, with their temperature variations.

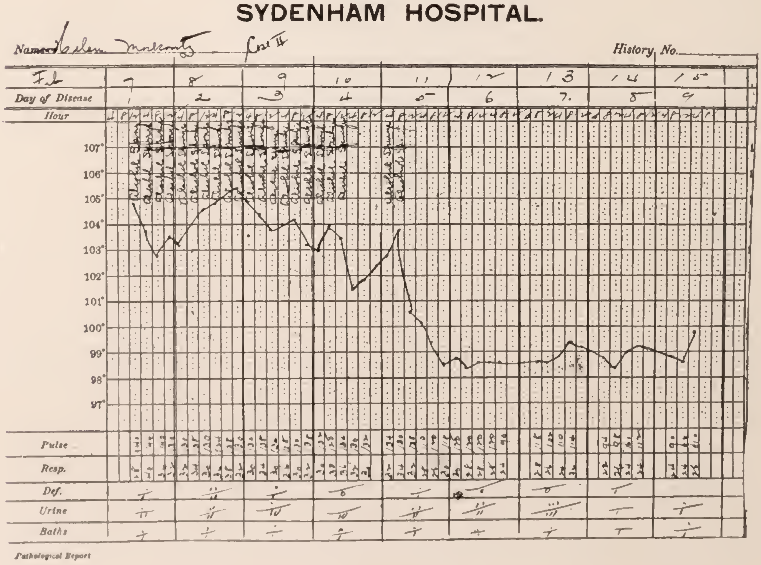
Case I. H. P., three years of age, admitted to the baby wards of Sydenham Hospital on February 9, 1911, with a consolidation of the left lobe posterior. There was a harsh, dry cough present, a temperature of 104, respiration 60 and pulse 150, full bounding. Camphor 20 per cent. emulsion (10 cc.) twice a day was started by hypodermic injection the same day of admission. There was little change in the pulse, temperature and respiration until the fourth day, when the variation of 105 to 102 in the temperature changed to 102 to 100 for two days, then gradually going down until a perfectly normal temperature was reached on the tenth day; the respiration varied correspondingly, the dysponea gradually diminishing. The cough persisted throughout the entire course and restlessness of the child did not abate, especially at night, when the child tried to sleep.

Case II. H. M., seven years of age, with consolidation of both lungs anteriorly; temperature 103, pulse 130, respiration 32. Camphor immediately started. On 5th day temperature began to vary from 102 to 98, respiration and pulse correspondingly improving, then resuming a normal temperature for next

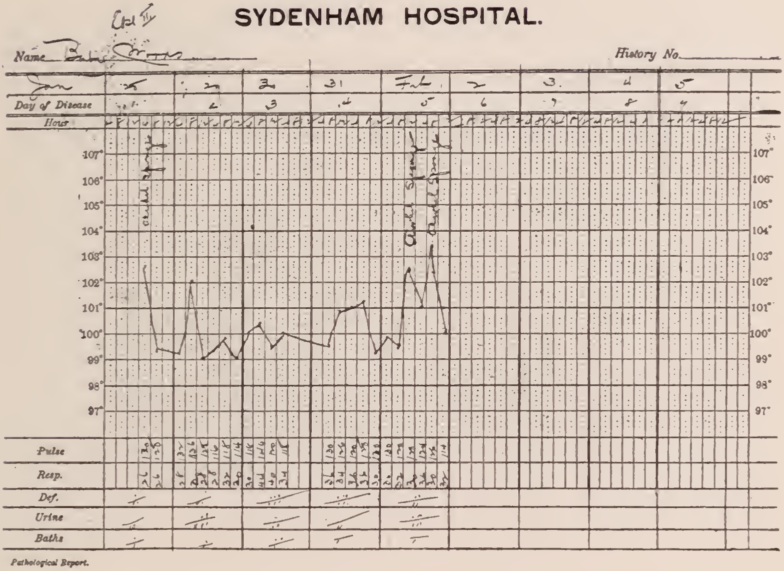
Case I.



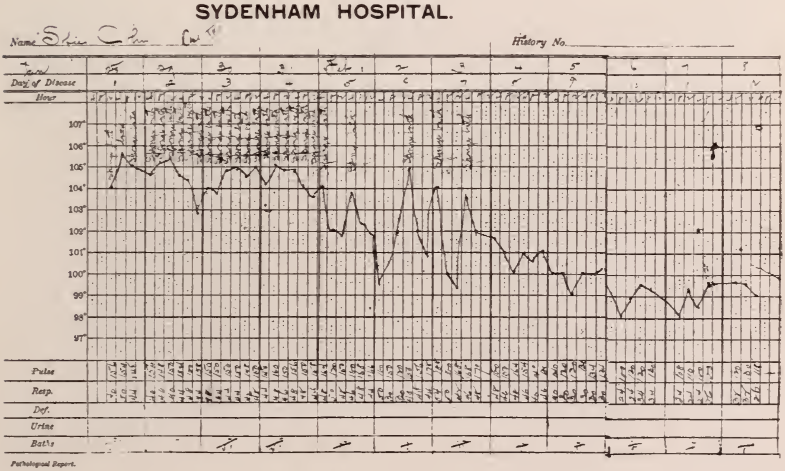
Case II.



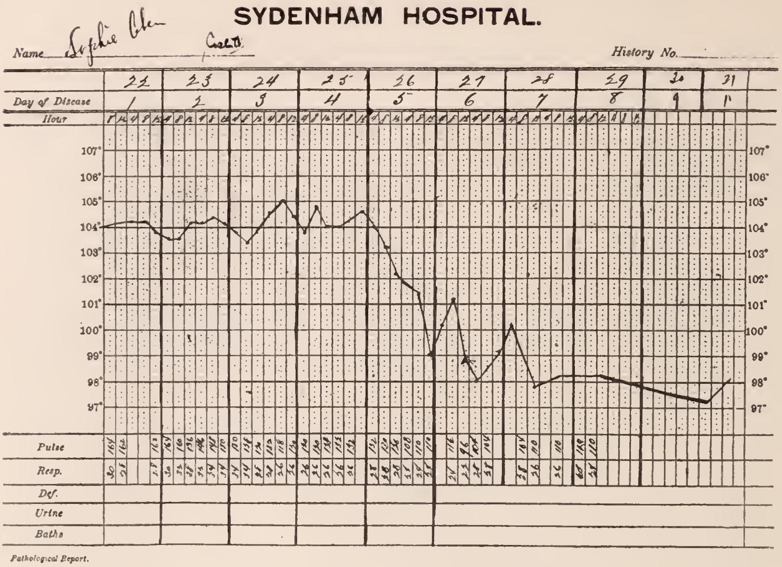
Case III.



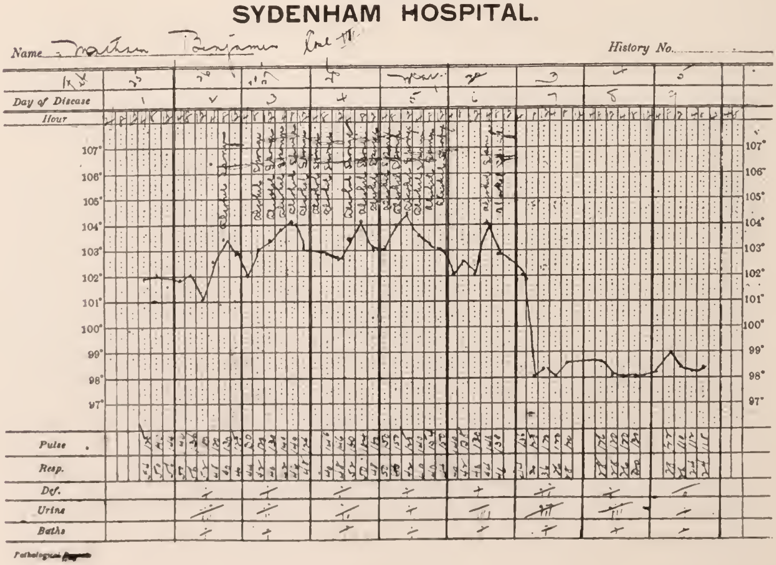
Case IV-a.



Case IV-b.

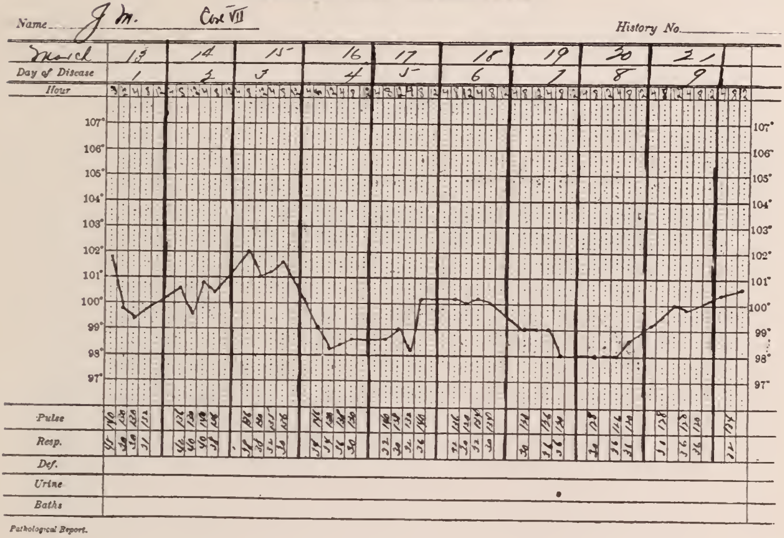


Case VI.



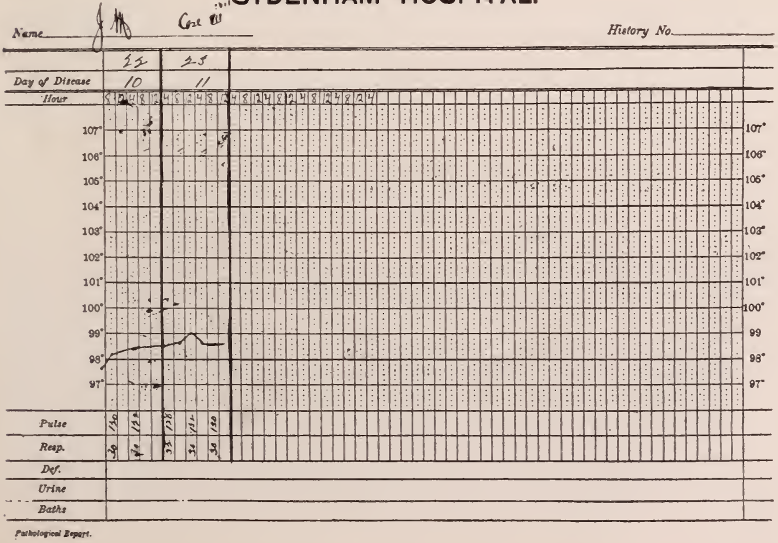
Case VII-a.

SYDENHAM HOSPITAL.

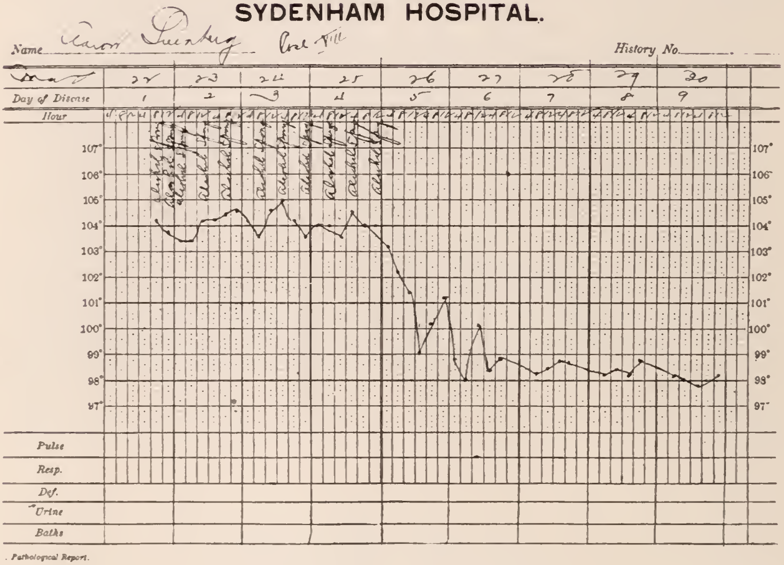


Case VII-b.

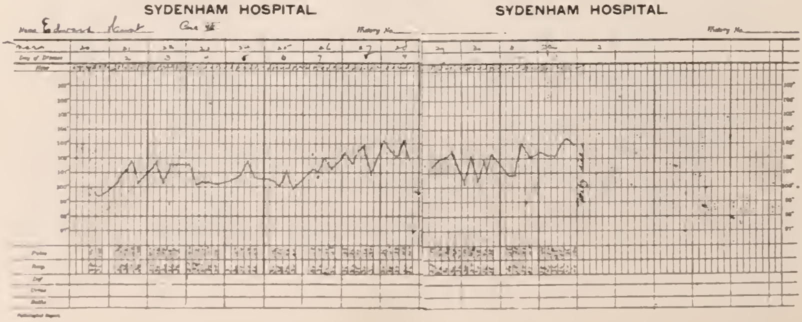
SYDENHAM HOSPITAL.



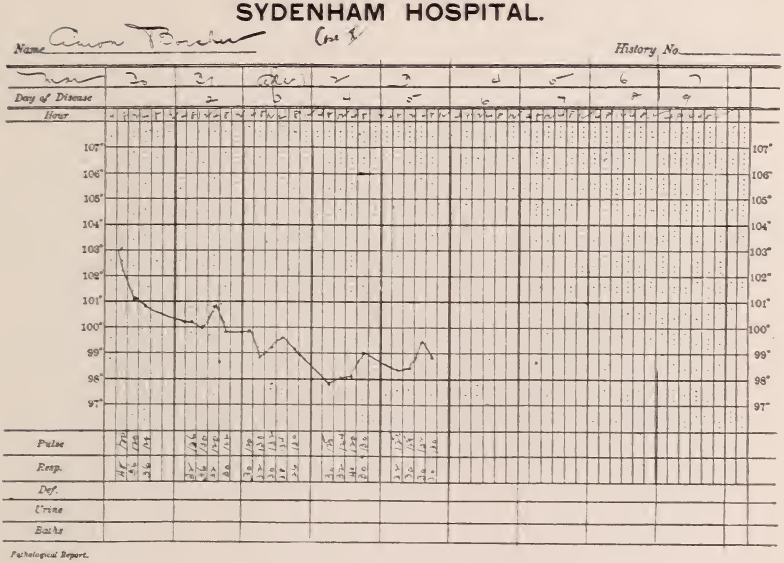
Case VIII.



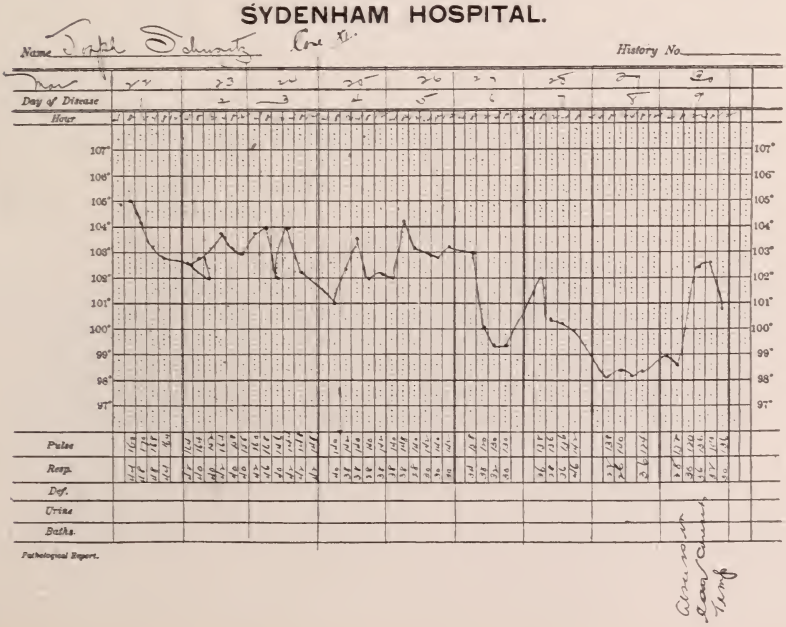
Case IX.



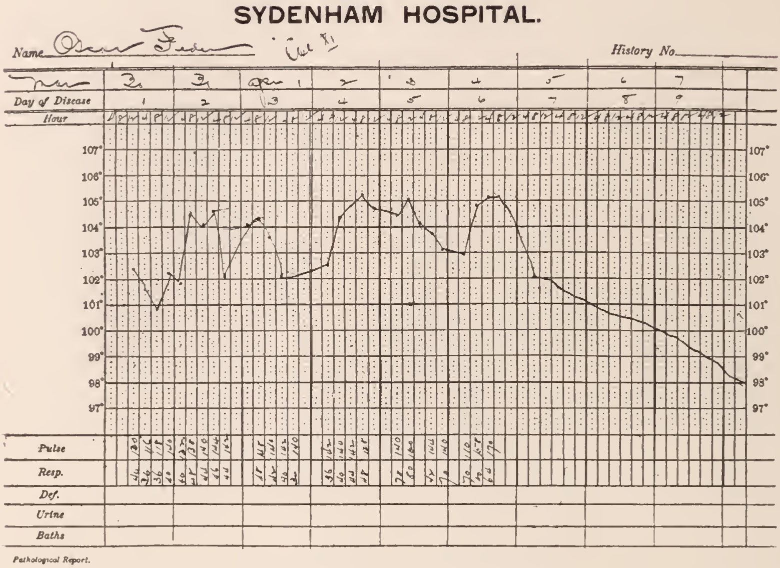
Case X.



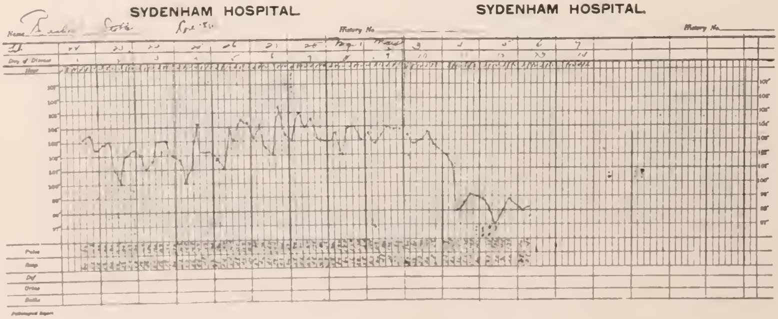
Case XI.



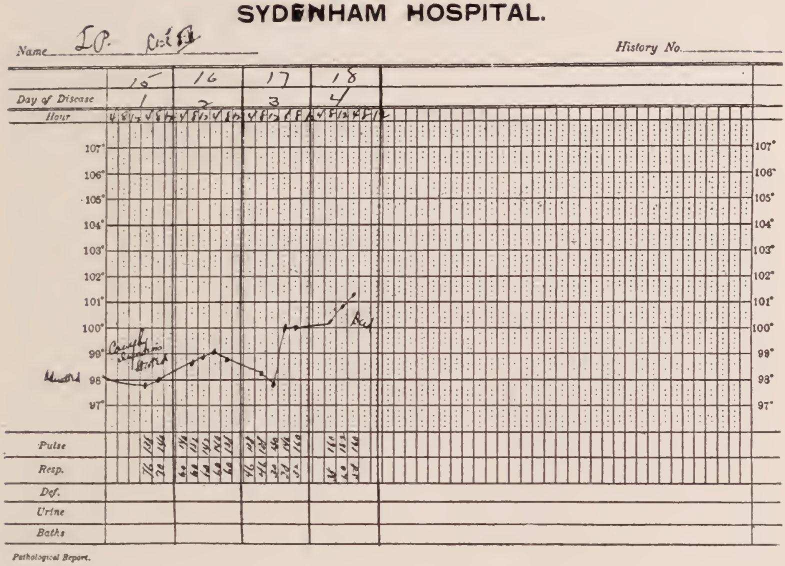
Case XII.



Case XIII.



Case XIV.



nine days. Consolidation gradually disappearing, returning to normal breathing on ninth day. Restlessness slightly improved throughout. Cough persisting.

Case III. B. W., three months old, admitted January 28, 1911, with a lobar pneumonia on the right side, temperature 102, pulse 130, weak and irregular, respiration 26. Camphor 10 cc. started, temperature varied from 102 to 99, no improvement in pulse or dyspnea, on fifth day, child died, temperature going up 104 to 101 same day.

Case IV. S. C., three years old, hydrocephalic head, emaciated, admitted January 28, with consolidation of the left lobe posterior, temperature 105, pulse 154, irregular, respiration 50. Camphor started on the eighth day, temperature fell to 98.2, then went up to 102 on next day, for four days temperature varied from 103 to 100, on ninth day again fell to normal, on the fourteenth day got up a cellulitis of the arm, temperature jumping up to 105, and falling to normal on thirty-first day. Consolidation had already disappeared on the fourteenth day. Child stuporous throughout, excessive cough persisted.

Case V. R. L., two weeks old, admitted February 22, 1911, with broncho-pneumonia on right side posterior, temperature 103, respiration 60, pulse 160, weak and irregular. On eleventh day, temperature gradually came down to normal.

Case VI. M. B., three and one-half years old, admitted February 23, 1911, with right lobar pneumonia, temperature 101, pulse 144, respiration 50. Camphor started, ran even temperature until it dropped to normal by crisis on the seventh day.

Case VII. J. M., seven months old, was admitted into the hospital on March 13, 1911, with a broncho-pneumonia of both lungs, posteriorly, temperature 102, respiration 48, pulse 140, irregular, rapid and weak, excessive coughing, noisy respiration, extreme restlessness. Camphor started on eighth day, came to normal gradually, then went up to 100 same day, again dropping to normal on tenth day by crisis remaining until discharged. All other symptoms gradually improved.

Case VIII. A. G., eight and one-half years old. Admitted March 22, 1911, with temperature 104, respiration 30, pulse 164, irregular. No physical signs were obtained. Central pneumonia was the tentative, diagnosis made. Two days later large patch appeared on the surface of right lung posteriorly. Camphor was started, on the fifth day, came down to normal gradually, went up to 100 same day coming down again to 98.

Case IX. E. H., admitted March 20, 1911, with consolidation on right side posteriorly, temperature 99, then went up to 101. Camphor started, pulse did not improve, temperature varied from 100 to 103 and child died on thirteenth day after admission.

Case X. A. B., six months old, admitted March 30, 1911, with consolidation left side anteriorly and posteriorly. Temperature on admission 103, respiration 48, pulse 120, irregular, extreme restlessness. Camphor started, temperature dropped to 100 and gradually came down to normal, remaining so until discharged.

Case XI. J. S., admitted March 22, 1911, temperature 105, respiration 44, pulse 168, broncho pneumonia on both lungs, posteriorly. Camphor started, temperature varied from 104 to 101, gradually coming down to normal. Rise in temperature on the ninth day due to abscess in middle ear. Patient discharged.

Case XII. O. F., admitted March 30, 1911, broncho-pneumonia, both lungs, anterior and posterior, temperature 102, respiration 40, pulse 130, weak and irregular. Camphor started, temperature went to 104 and varied from 105 to 101 until seventh day, going to normal gradually on tenth day.

Case XIII. R. S., admitted February 22, with broncho-pneumonia of both lungs, posteriorly. On the eleventh day, temperature fell by crisis and child died after.

Case XIV. L. P., four weeks old, admitted into hospital March 15th, 1911, with broncho-pneumonia in left lower lobe, posteriorly. Camphor started, temperature on admission 97.8, pulse 130 and weak, respiration 76, went up to 99 next day, subnormal next and died on the fourth day.

From the above reports of cases, it seems as if the camphor injections do act as a germicide in the blood, although its specified action in each case cannot be determined. The disease does not seem to be shortened in its duration by it, the termination by lysis varying in different cases, some ending by crisis. The restlessness or dyspnea does not seem to be affected. It is a question whether these cases reported would not have run the same course, had the injections not been given, (the disease being self-limited).

INFANTILE PARALYSIS SIMULATING CEREBRO-SPINAL MENINGITIS.*

BY
ARNOLD NETTER, M. D.
Paris, France

In the summer and autumn of 1909 and 1910 infantile paralysis was epidemic in a large area of France, including Paris. In many of the cases the early symptoms resembled those of cerebro-spinal meningitis and led to that diagnosis, and more rarely to the diagnosis of tuberculous meningitis. In his own practice the writer noted this character in nearly a third of the cases. Lumbar puncture yielded clear fluid containing principally lymphocytes. But this result was not constant, and the existence of meningitis due to the diplococcus of Weichselbaum, in which the cerebro-spinal fluid is clear and poor in polynuclear cells is now well established. Therefore, the diagnosis cannot be based on the cytological examination alone. The existence of an epidemic of infantile paralysis and the prevalence of cases in the summer and autumn, when cerebro-spinal meningitis is rare, should put the observer on his guard. Side by side with cases in which the meningeal symptoms were followed by permanent paralysis with atrophy were other cases in which the paralysis was transitory and slight. In these cases the symptoms were predominantly meningeal. This meningeal form of the infantile paralysis has been previously described in the epidemics in other countries, for example in Sweden by Wickman.

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*Bulletins de la Societe Medicale des Hopitaux, de Paris, November, page 444.

The existence of this form of infantile paralysis is not surprising. The disease is always accompanied by meningeal reaction, at least by a histological one. This is shown by the presence of cells in the fluid removed by lumbar puncture in the early days of the disease, and by microscopic examination of the central nervous system, which always reveals infiltration with mononuclear cells of the pia mater and its prolongations. The lesions of the pia mater are most marked at the lumbar enlargement, but extend from this in less degree to the brain. This inflammatory reaction may not betray itself by any symptoms or may produce only ambiguous signs, such as the spontaneous and provoked pains, so frequent in the early stages. The writer now only considers cases in which symptoms considered characteristic of cerebro-spinal meningitis—rigidity of the neck and trunk, Kernig's sign, etc.—were present. The cases may be divided into two classes. In one marked paralysis developed and the diagnosis at this stage was evident. In the other, the paralysis was slight and transitory, indicating less profound changes in nerve centres. No doubt certain cases described as cerebro-spinal meningitis, in which no signs of paralysis were observed, were due to the virus of infantile paralysis. The two diseases, though due to very different causes, seem to follow one another quickly in the same locality or the same country and to be favored by similar meteorological conditions, but each has its season of predilection: cerebro-spinal meningitis, spring and winter; infantile paralysis, summer and autumn.

A youth, aged 17, was attacked with severe coryza on July 12th, but his general condition remained excellent. On the night of the 28th he had a slight rigor and headache which yielded to antipyrin. On the 30th, after a walk, he felt abnormally fatigued, but his appetite remained good. At 4 A. M. he had violent headache and next day the temperature was 100.4 degrees. He remained in bed, and in the evening complained of slight pain in the back. At 10 P. M., the headache, which had diminished during the day, increased, the pain extended to the whole spine, and the neck became stiff. The pulse increased in rapidity until it became uncountable, the respiration was accelerated ,and he became delirious. On August first the temperature was 103 degrees, the pulse 130 and the respiration 60. His medical attendant without hesitation diagnosed cerebro-spinal meningitis.

The writer saw the patient in consultation in the evening. The temperature was 102.2 degrees, the head was retracted, and Kernig's sign was present. There were pains in the head, neck, loins and limbs. Lumbar puncture was performed and yielded clear fluid under high pressure. In order not to lose time the puncture was followed by injection of 30 cc. of serum. Microscopic examination of the fluid showed a marked increase in the number of cells, which were almost exclusively lymphocytes. There were no microbes and cultures remained sterile. The characters of the fluid aroused the suspicion that the disease was not cerebro-spinal meningitis but acute poliomyelitis accompanied by a meningeal reaction. Treatment consisted in hot baths and the administration of collargol and adrenalin. On the third the knee-jerks were absent, which favored the diagnosis of poliomyelitis, but the other symptoms were those of meningitis—rigidity of the neck and trunk, general hyperesthesia, pain on being touched or on movement. The muscular power seemed to be intact. On the following day he could not move his legs and could scarcely move his toes. There was retention of urine with oliguria, which lasted for three days. There was tingling in the upper limbs and marked loss of power soon followed. For several days paralysis of the muscles of respiration, including the diaphragm, was present. The respiratory difficulty gradually diminished, and he regained power in the arms and legs. Improvement continued, and on Sept. 14, he could walk, but there was weakness of the muscles of the trunk, shoulders and thigh. Electrical examination showed that there was no degeneration; the muscles responded to faradism. The muscles most affected were the left quadriceps, the muscles of the right leg and buttock, and the muscles of the back, especially on the right side. The hot baths had a favorable action at all periods of the disease. In the acute stage they relieved the pain. Later they promoted the return of movements;

the patient could move the limbs much better in the bath. In November the difference between the two quadriceps muscles had almost disappeared, and the only other change was that the right calf was a little smaller than the left; this was particularly noticeable in the tibialis anticus.

A girl, aged eight, previously in good health, complained of pain in the back on November fifth. Next day she could not get up in consequence of the pain. On examination in the evening there were a temperature of 104 degrees, marked rigidity of the neck and trunk, hyperesthesia, and Kernig's sign. On the seventh, after purgation with calomel and the administration of salicylate, the temperature was 103.2 degrees, and the pain was less. On the eighth there was paralysis of the right arm, particularly of the shoulder. Lumbar puncture yielded 30 cc. of clear liquid which flowed in drops. It contained numerous leucocytes, of which the percentage composition was: mononuclears, 5; polynuclears, 17; and lymphocytes, 75. The temperature was 101.6 degrees. After the puncture the child was much better and suffered less. Progress continued, and on the 11th the temperature was 99.6 degrees, she could move the head freely and the arm better, the greatest defect being at the shoulder and elbow.

MEDICAL INSPECTION OF SCHOOL CHILDREN.*

BY

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There seems to be a general impression in America that medical inspection of school children is still on trial and that we are leading in this important work. The reverse of both of these impressions is true. With Brussels having a systematic inspection since 1874 and Paris since 1884, with scientific journals in France and Germany devoted exclusively to this subject and the movement a national one in France, Switzerland, Sweden, Belgium, Bulgaria, the Argentine Republic, Japan and England, it is evident that save in details the matter is a settled one, and that America is the last of the civilized nations to consider seriously this problem.

In this State, Spartanburg and Seneca have already set us the example.

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*Read before the South Carolina Medical Association, April meeting, 1911.

Ignorant or uninformed parents complacently say that all children have to have the common diseases of childhood, the sooner the better. But they are now learning that epidemics of measles, scarlet fever and diphtheria are not essential diseases of childhood, but are diseases that can and should be prevented. The bearing of schools upon these diseases will be shown later.

The intelligent parent is learning that though Johnny and Mary may outgrow the condition that compels them to be mouth breathers, still it will not be until their school days are over or nearly over, and they are learning that mouth breathing is frequently associated with impaired health and impaired hearing, and it is nearly always associated with impairment in the child's ability to study, or so it has been found three hundred and eighteen times out of three hundred and forty-one.

The intelligent parent now does not lightly regard a suppurating ear, one of the least of its evils is an extremely offensive odor, or a mastoid abscess. Discharging ears in children are preventable; the same may be said of crossed eyes and defective vision, these being nearly always either preventable or curable, and not among the diseases necessary to childhood, that should be left to be outgrown.

As about nine out of every ten children go to school and as their school days are in the growing period the critical period of life, viz., from the seventh to the fourteenth year of age, their lives should be especially guarded.

An extract from a memorandum of the British Board of Education says: "Medical inspection seeks to secure ultimately for every child, normal or defective, conditions of life compatible with a true education, which is that free and effective development of its organic functions, its special senses and its mental powers. A sound mind in a sound body has long been held to be the goal to strive for. Educators have sought to procure the highest development of the intellectual side of the human life. For the accomplishment of this the curriculum has been raised in every grade, the hours of daily study increased, the number of months in every school year increased, and the number of years of school life increased. This has resulted in attacking the other side of human life, the medical or physical side. This attack results in reducing the hours of play and increasing the duration of mental and physical strain, calling for more and more vitality until frequently physical wreck results from too great an effort to obtain an intellectual phenomenon. In the J. A. M. A., August 13, 1910, in an article on the "Therapeutic Value of Medical Inspection of School Children," it says in part: "Most diseases are as fatal (except tuberculosis and diphtheria) as they have ever been." "The nervous strain and tension of our lives, and especially of the lives of our children, has enormously increased, and with all the advance in medical science it is just as difficult to bring a patient through a serious illness now as it ever was, perhaps more difficult. If there was no more medical knowledge than there was a hundred years ago, and if patients were treated therapeutically as they were a hundred years ago, most patients would die. Therefore, although medical knowledge and science have advanced, the difficulties of caring for patients have increased. Hence every possible method of prevention of disease and of the development of a disability and of the growth of a tendency to disease should be utilized." Therefore the educators and doctors have joined hands in endeavoring to keep a sound body on the outside of a sound mind.

Hence medical inspection to be effective must embrace in its scope the following:

First. The relation of the school child to its fellow children as to the communicable diseases, ringworms, pediculosis and various forms of skin diseases.

Second. The relation of the school child to its community in which it lives as to the infectious diseases, measles, scarlet fever and diphtheria.

Third. The relation of the educating of a child to its physical life as to the effect of the school life upon its health, illustrated by the physical wrecks from over-study, cases of great mental development with physical deterioration the effects of poor school hygiene on the child's physique.

Fourth. The school child with reference to its ability to gain an education, or the influence of physical defects upon the educational side of the child's school life. Physical defects versus education and all it means. The discovery of these defects and their removal consequently is of supreme importance to the child.

The relation of the school child to its fellow children and the relation of the school child to the community in which it lives can only be effectively dealt with by the board of health assisting the doctor.

The effect of the strain of school life on the child's health and the influence of any physical defect upon the child's ability to effectively study can only be successfully combated by the board of education assisting the doctor.

Briefly we will see the practical bearing of a few subjects. School hygiene comprises, of course, cleanliness of school and yard, and proper toilet accommodations, all of which I have found frequently lacking. It comprises a uniform temperature in the school room, not the roasting of Willie near the stove and the freezing of Johnny in a distant corner; it comprises proper ventilation, and the light directed, not into the eyes, but upon the blackboard and books. It consists in the seating of the deaf child where he can hear, and the child with defective vision where she can see. In seeing that the tall child is not seated at a low desk where it has to stoop over to see, nor the short child at the high desk where its work is too close to its eyes.

Dr. Buckler, one of the medical inspectors of Baltimore, says that diseased tonsils and adenoids, are generally regarded as the result of the continued breathing of impure and vitiated air. The idea is not familiar to me, but his observations are interesting and extensive. I have gone over them carefully and classified the hygienic conditions of the schools into good, medium and poor, and under each class found the per cent. of the physical defectives in each school.

Hygienic condition.	Defective children	Eye & ear diseases
Good	22.6	4.5
Medium	31.1	6.1
Poor	38.5	7.3

Hygienic condition.	Malnutrition	Nose & throat diseases
Good	0.6	10.7
Medium	2.25	14.5
Poor	3.5	18 0

Hygienic condition.	Communicable diseases
Good	2.1
Medium	3.9
Poor	7.7

The percentage, you see increases as the hygienic condition decreases. These percentages are taken from children of all classes and they speak for themselves.

With bad ventilation nose and throat diseases are uniformly high. Impaired vision occurs in a higher percentage and is uniformly worse in schools poorly and improperly lighted. His conclusions are striking and convincing.

Bad teeth are the cause of present discomfort and future trouble with indigestion and impaired nutrition from the improper chewing of food and also trouble from absorption of septic material from the cavities in the decayed teeth.

Bad teeth occur in a high percentage. From the report of the superintendent of education of New Orleans, 1909 and 1910 we find that the average of bad teeth is 43 per cent. from the sixth (59 per cent.) to the fourteenth year (30 per cent.), inclusive. Some cities supply the school children with a leaflet which explains the results of decayed teeth and tells how they may be cared for.

General Physical Examination.—This feature has not been practiced long enough to give conclusive knowledge on many points. But it requires no argument for any reasonable person to see the advantage of detecting commencing deformities, organic heart lesions and tuberculosis in any of its stages.

Contagious and infectious diseases or the relation of the child to its fellow children and the relation of the child to the community in which it lives. This feature in point of time ranks first as an object of physical inspection.

In cities not employing school nurses about 10 per cent. of the children referred to the school physician will be found suffering from diseases serious enough to warrant their exclusion. There is much that I could say on the financial saving from employing a school nurse, but time does not permit. There is a mass of evidence showing that schools are the principal means of disseminating disease throughout a community. The result of school inspection is: Since the introduction of medical inspection of school children in one of the large cities diphtheria has fallen off two-thirds and scarlet fever has fallen off five-sixths. Diphtheria used to be more common during school term; now it is more frequent during the vacation period. Ninety per cent. of the deaths from contagious diseases occur before the tenth year of age.

The practical working of medical inspection, except for the periodic general inspections, is as follows: The teacher noticing some diseased condition promptly refers the child to the inspector for diagnosis. Therefore the teacher may be said to be the eyes of the system of medical inspection, and just as the eyes of the army depends upon the efficiency of its cavalry, so this system depends greatly on the powers of observation of the teacher. To aid the teacher many cities furnish her with a card to be kept before her on her desk, and printed on this card are the following suggestive symptoms:

1, posture; 2. emaciation; 3. color (pallor or flushing); 4, dulness or sleepiness; 5. activity, physical; 6, teeth misplaced or diseased; 7, mouth breathing; 8, frequent absences; 9, bad behaviour; 10, inattention; 11, delinquency in studies; 12, defective vision or other eye symptoms; 13, defective hearing; 14, nasal voice; 15, discharging eyes, ears or nose; 16, skin diseases or pimples; 17, offensive breath; 18, over-development, physical; 19, under-development, physical; 20, twitching of face or eyes; 21, sore throat; 22, uncleanliness; 23, headache; 24, swelling behind the jaw; 25, enlarged glands in the neck; 26, frequent request to go out; 27, scratching of any part of the body; 28, vicious pesonal habits; 29, limping; 30, stuttering or stammering; 31, coughing; 32, irritating discharge from nose; 33, return from alleged sickness without doctor's certificate.

This serves as a reminder and if her suspicions are aroused she writes her observations on the proper card and refers the case to the inspector, who writes the diagnosis and disposition of case on the same card and returns it to the teacher. This card becomes that child's permanent record, and should be kept by the child's teacher as a reference card, going from room to room and from school to school with the child. For it does no good to record at the City Hall that Willie is deaf in his right ear, and the teacher not knowing it, to seat Willie in the left-hand corner of the school room. The same may be said about defects of vision. The record of each case is therefore quite important. By the system in use in Japan the department of education can readily tell the number of robust children, their condition of eyesight, the diseases most prevalent at a given age, etc.

As Gulich and Ayres say: "This is a field of work where general information will not do. Physical defects are not equally significant from a medical and from a pedagogical standpoint. It is unfair and misleading to classify under the same heading club-foot and defective hearing, adenoids and ringworm. There must be a complete and individual record for each child, with a space for each year of its school life and with spaces for recording the results of subsequent examinations. If the results of the work are to be of practical value, there must be the closest connection between the records of the physical examination and the class room work for each year."

Cleveland, Ohio, has a simple and compact card that answers all requirements. Facility in work is essential to success. By the system used in Chicago the medical inspector can, by the use of a carbon paper and a book similar to a pocket check book, write at the same time these four notices: First, notice to parent; second, record for school authorities; third, record of board of health; fourth, record for himself, each showing disposition of the case, and write it just as quickly as if he were writing a check. Three of these four records are torn out and mailed to the proper parties.

The frequency of the general examination of the school varies in different cities, in some annually, some bi-annually, and some more often. The inspector visits the school every morning and sees the new cases referred by the teacher, and keeps track of the cases that have been seen previously; this latter is essential to effective work.

We belong to an investigating age, where all who truly represent progress are trying to discover the wherefore of things. Hence many diseases that used to lie partly covered by the veil of ignorance now have their causative factor brought into the light of perfect knowledge. Great educators, in striving to give every child the benefit of education, have found their course impeded by the backward child, or by the child that could not learn.

According to the report of the superintendent of education of New Orleans, the causes of backwardness in children are all preventable. According to Cornell, of New York, public schools suffer a discount of about six per cent. in educational results from physically defective children.

Backward children and retardation in education are twofold in their effects.

First. The pupil longer at school, less education and less prepared for life's work.

Second. The child longer at school, increases the cost of education and over-crowds the schools.

Some of the causes of this condition are the spread of contagious diseases through a school, defective sight or hearing, mental dulness from adenoid growths, exclusion while infected with some communicable disease.

The effects of nose and throat diseases, especially adenoids, have been frequently proven. The percentage of adenoids are as follows: In bright children, 11.1 per cent.; dull children, 28.1 per cent.; dullest children, 31 per cent. The effects of bad vision may be learned from taking the average on the following every-day studies: Spelling, arithmetic and geography.

Child with normal vision averaged 75.

Child with fair vision averaged 73.

Child with poor vision averaged 69.

But most important of these all is the fact that defective vision increases with life, from 20.2 per cent. in the second grade to 32.3 per cent. in the eighth grade. One-fourth to one-third of the children have defective vision to the extent of requiring special care if they are to do their work properly, without injury to their eyes.

School life is one of explanation and instruction; if they cannot hear they cannot learn; five per cent. are so defective in hearing as to seriously interfere with their work.

The question of backward and retarded children is closely woven into the financial question. If a child takes nine years to complete a six years' course, it costs one-third more. If a child leaves school because it cannot keep up, or leaves with a poor education, the citizenship of the State suffers. It has been proven that the removal of adenoids and correction of sight and hearing has often cured retardation and enabled children to join their regular classes.

Therefore, "Any influence which tends to reduce absences results in an increased use of the school facilities, and so in a greater economy, a higher degree of efficiency and better results as measured by educational standards of progress. Medicinal inspection, in banishing diseases from the schools, and in preventing or removing physical defects, has a large and important influence in bringing about this greatly to be desired result."

The legal side of this question varies. One state compels inspections; a few permit it; in most the law is silent on the subject, but 23 states have it, many without specific authority, and the number is steadily increasing. Medical inspection does not assume the over-sight of the pupil in such a way as to trespass on the parental right; it merely tells the need of the child, and the parent seeks the remedy at the proper source.

By our fruits are we judged. The results of medical inspection have been extremely satisfactory.

First. In the promotion of efficiency in the schools.

Second. In the protection of the community.

Third. In the preservation of the lives of the children, and promotion of a healthy spirit among them. Illustrations are manifold and interesting, but time is short.

Medical inspection to be effective must have for its roots the minds of an intelligent public. The days for quests of the elixirs of life have passed into the days where we have learned that the true elixir of life consists in procuring healthy babies, and then in preserving and protecting their God-given health, and thus naturally obtaining an old age characterized by comfort and physical peace, or, briefly, we apply hygienic and preventive medicine in its broadest sense. We have seen the results of the abolition of the public drinking cups; we are learning the evils of the school slate and the effects of its abolition. We know the disastrous results of impure drinking water, and of impure milk, and we have learned, or should have learned, the need of medical inspection of school children and of schools.

INFANTILE SCORBUTUS.*

BY

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Columbia, S. C.

In the whole range of pediatrics there is no disease that is more interesting, nor one for which we can do more brilliant service, than scurvy, which is a constitutional disease due distinctly to faulty nutrition.

Etiology.—Our knowledge of this disease is due mainly to the investigations and writings of two English physicians, Cheadle and Barlow. The former publishing his cases in 1878, the latter publishing in 1883 so exhaustive and complete a work that little has since been added to our knowledge of the subject. In recognition of this work the disease is generally known in Europe as Barlow's disease. To these two authors, especially is due the credit of differentiating between infantile scorbutus and rickets, a disease with which it is sometimes associated.

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*Read before the South Carolina Medical Association, April Meeting, 1911.

America, however, has contributed her share of investigation upon the subject. In the report of the American Pediatric Society's Collective Investigation of Infantile Scorbutus published in 1898 embracing 379 cases by 138 observers, is found much interesting and valuable data, especially upon the etiology of the disease. From the data furnished by the investigation proprietary infant foods head the list with 214 cases, sterilized milk next with 107 cases, condensed milk next with 60 cases, pasteurized milk next with 20 cases. Twelve occurred in children that were entirely breast fed. An examination of the milk in these cases showed marked deficiency in the necessary food elements. Diet is unquestionably the most important etiological factor in the disease. It is a mooted question as to whether or not infantile scorbutus is the result of the absence of some essential element in the diet or the presence of some scorbutic element.

The theory of the presence of some scorbutic factor of the nature of a ptomaine present in the food has some distinguished adherents, but the preponderance of evidence points to the probable correctness of the theory of an absence of some essential element in the diet, and the adherents of this theory point to the indisputable fact that whatever the food the child may be taking, if potato gruel and fresh beef juice be added to the same diet, and no medicine given, the child will speedily recover. Should, however, these new elements be withdrawn and the diet not otherwise changed, scurvy will recur.

In regard to sterilized milk as a causative factor there remains quite a difference of opinion. Rotch says that in his experience there is no evidence that sterilized milk is a cause of scorbutus. He evidently believes that where the disease occurs in children who are fed upon sterilized milk that the fault lies in the improper composition of the food.

Robert Hutchison, quoting Corlette, says that raw milk contains a considerable quantity of citrate of lime in an amorphous and soluble form. Its solution being aided by the presence of phosphates, and that boiling the milk converts the amorphous into the crystalizable form of the salts which is less soluble and separates out. Boiling also causes the milk to become poorer in citrates.

Star and Griffith both believe that sterilized milk is an important factor in the causation of the disease. Fischer says that prolonged sterilization devitalizes milk. Holt says he has seen cases promptly recover when no other change was made than to discontinue the heating of milk.

It must be remembered that none of the authorities quoted disapprove of sterilized milk under certain circumstances and over short periods of time, but the danger they think lies in the prolonged sterilization of milk over a long period of time.

The child's age is an important etiological and diagnostic factor in this disease. Fischer says that the disease rarely occurs before the sixth month. Holt says that four-fifths of the cases occur between the sixth and fifteenth months, half of them between the seventh and tenth months.

Morbid Anatomy.—The pathology of infantile scurvy is characterized by a tendency to hemorrhages, especially subperiostal hemorrhages of the long bones. Rotch says most commonly the former. Sometimes these hemorrhages are so great that they produce separation of the epipheses and a condition known as proptosis—a bulging forward of the eye ball from an extravasation of blood behind. It is doubtful whether any changes occur in the blood peculiar to scorbutus.

Symptoms.—It is very important that the disease be recognized early—before the symptoms are well marked. The disease commences by the child becoming irritable and fretful, wakeful at night and progressively anemic. It loses its appetite and its weight gradually decreases. It objects to being handled because of pain in the limbs. As the disease advances the child's facial expression is one of extreme apprehension. If anyone approaches it or tries to handle it, it will cry out. The legs are held motionless to prevent pain. This often gives rise to the fear that the child is paralyzed. Just above the epipheses there are present swellings. These swellings are most common and prominent in the legs, but may appear in the bones of the forearm. They are tense but not fluctuating, and are extremely sensitive to touch. Over the swollen areas may be seen blue-black maculae, which tend to spread until quite a considerable sized spot results. This symptom along with separation of the epipheses which sometimes occurs, and the fact that children thus affected have frequent falls, often causes a mistaken diagnois to be made. Dislocation or fracture being suspected.

An inspection of the mouth reveals an interesting condition—the gums appear purple, spongy, and swollen, and bleed upon pressure. Holt says a most striking feature is the dark purplish bags which form over teeth about to be cut. There may be bleeding from the entire surface of the mouth resulting in vomiting of blood swallowed, or its passage in the feces.

Hematuria also occurs in some cases. Proptosis only occurs where the disease is advanced and severe. Fever is an inconstant and unimportant symptom. The child with a well developed case of infantile scorbutus is truly a pitiable sight.

Diagnosis.—The diagnosis of infantile scorbutus does not offer any serious difficulties if the symptoms of the disease are kept in mind. It is probably most often mistaken for rheumatic fever. Robert Hutchison who now holds the position at Great Ormand Street Hospital, London, formerly held by both Cheadle and Barlow, and whose wide experience entitles his opinions upon this and other diseases of early life to the greatest respect, says that rheumatism does not occur in children under one year of age. The pain and tenderness of the legs only should suggest scurvy rather than rheumatic fever.

Infantile paralysis beginning with hyperesthesia of the limbs might be mistaken for infantile scorbutus, but that disease is seldom seen under one year of age, and the acute tenderness should here again set us right.

The separation of the epipheses sometimes occurring in infantile scurvy is occasionly mistaken for a dislocation, the result of injury, but the other symptoms of the disease which are invariably present when separation of the epipheses occurs should direct us right. The same line of reasoning will hold good also in distinguishing infantile scorbutus from infantile atrophy and from general tuberculosis.

The distinguished author, Dr. Robison, whom I have just quoted urges that when there exists a reasonable diagnostic doubt between infantile scurvy and another disease which so closely resembles it, that the treatment for infantile scorbutus be at once instituted and watch results.

Prognosis.—The prognosis of this disease is invariably good when recognized and prompt and correct treatment instituted. Relapses in this disease are very uncommon.

When the disease is allowed to continue untreated the child invariably dies of inanition, sudden heart failure or some intercurrent disease.

Treatment.—Change of diet is the first indication. Raw milk alone is said to be curative, without further treatment. However it is a well established fact that orange juice is almost a specific. Fresh fruit juice is most helpful. Potash salts are highly recommended, and perhaps the best way to administer them is by taking the mealy portion of white potato which has been baked in the skin (the portion immediately under the skin) and rubbing it into a paste with milk, administer it stirred in milk.

OUR AUGUST ISSUE WILL CONTAIN THE FOLLOWING PAPERS.

The Statistics of Infantile Paralysis, by Dr. C. A. Hodgetts, Ottawa, Canada.
The Physiologic and Legal Status of the Fetus in Utero, by W. H. Sanders, M. D., Montgomery, Ala.
Ophthalmia Neonatorum, by Albion H. Little, M. D., Portland, Me.
The Portals of Entry of Tuberculosis in Children, by Philip S. Potter, A. B., M. D., Syracuse, N. Y.
A Case of Purpura Treated With Human Blood Serum, by L. S. Luton, M. D., St. Louis, Mo.
Are We Satisfied with our Present Knowledge as to the Cause and Treatment of "Summer Complaints?" by Samuel A. Visanska, Ph. G., M. D., Atlanta, Ga.
The Treatment of "Summer Complaint," by Irving D. Steinhardt, M. D., New York City.

OUR SEPTEMBER ISSUE WILL CONTAIN THE FOLLOWING PAPERS.

On the Medical Examination of Children Reported as Mentally Defective in the Public Schools, by Isabelle Thompson Smart, M. D., and Mary Sutton Macy, M. D., New York.
The Only Child, by John Ruhrah, M. D., Professor of Pediatrics, College of Physicians and Surgeons, Baltimore, Md.
Tonsillitis, by William F. Waugh, A. M., M. D., Dean, Bennett Medical College, Chicago, Ill.
Welfare of the Child From the Eugenic Standpoint, by Milton J. Bliem, M. D., San Antonio, Texas.
Intubation in Diphtheria, by E. W. Carpenter, M. D., Greenville, S. C.
Taka-Diastase in Nocturnal Enuresis, by Dr. Arthur A. Radclifie, Waukegon, Ill.

SOCIETY TRANSACTIONS

New York Academy of Medicine, Section on Pediatrics
Stated Meeting, held on May 11th, 1911.

Bacteriology of Milk.—This meeting was a symposium on the milk question and especially on the milk supply of New York City. Dr. William H. Park of the Research Laboratory Health Department, New York City ably discussed this subject before the Section.

The matter was discussed from various aspects by the leading authorities of New York from a scientific point of view, as well as by most of the physicians prominent in dealing with children's diseases. The discussion was opened by Dr. W. H. Park, reading a paper which treated mainly of the bacteriology of milk and it is needless to say that this phase of the subject was very ably presented. Dr. Park said that it was only within recent years that the importance of the bacterial contamination of milk had been generally recognized. The dangers due to bacteria in milk were also equally present in cream and to some extent in butter. It was remarkable that people should take such good care of milk and neglect cream and butter. Some of the saphrophytic bacteria when grown in milk produced harmful products, others produced those that were harmless or even beneficial in their effects. As was well known, the temperature had a great influence over the growth of these saphrophytes, below 40 F., they grew but slightly; at 50 F. they grew rather rapidly; at 60 F. they grew very rapidly. The pathogenic bacteria on the other hand, did not grow very well below 60 F. The diphtheria bacillus and the streptococcus grew moderately well at any temperature above this, while the tubercle bacillus did not grow at all. Milk varied greatly in its bacterial flora according to the territory from which it came; every county had some prevalent variety of bacteria different from that of any other; this had an influence, not only on the actual types of bacteria but also upon the deleterious products that were formed. The actual number of bacteria was not, therefore, a reliable index of the probable harmful influence of the milk on infants. An ordinary milk that had been kept cold for forty-eight hours in summer averaged at least two millions of bacteria per cc. and was apt to be very harmful to infants but usually produced no detectable bad effect on children above two years of age. In certified milk the number of varieties of bacteria was almost as many as in ordinary milk but the number was very considerably less.

Dr. Park told of an experiment made on fifty babies who were being fed on modified milk pasteurized at 160 F. for twenty minutes. Half of these were given the same supply of milk but with no previous heating. The living bacteria in the heated milk averaged about 10,000 per cc. while in the unheated milk the number averaged was about 1,000,000. There was a marked increase of diarrhea in the babies getting the unheated portion of milk and there was nothing but the bacteria that could be held accountable for this increase. A high temperature and humid air predisposed infants to intestinal diseases which cow's milk and bacteria tended to aggravate. It seemed that a certain immunity was acquired by an infant to bacteria in the regular milk supply. There was no doubt that the bacteria in a child's intestines was fully as deleterious for other infants as those taken in cow's milk. Change of milk often produced diarrhea in infants. This might be because an infant had become immune to the bacteria present in one kind of milk. Supplying pure milk will not preserve the majority of lives now lost through improper feeding, there must be instruction in the preparation and modification of milk and in the amount and frequency of feeding. Tuberculosis, typhoid fever, scarlet fever, diphtheria and tonsillitis were the chief diseases communicated by milk. Measles was apparently not conveyed in this manner. As milk was generally kept below 60 F. the typhoid bacilli and the streptococco were the only germs that increased to any appreciable extent. With regard to the relationship of bovine to human tuberculosis, the investigators of the Health Department had up to the present time completed at the Research Laboratory and studies on 470 cases of human tuberculosis, of these cases 300 were adults, and but one case was due to a culture of the bovine type. In 208 cases of pulmonary tuberculosis all were due to the human type. Twenty-five of the 109 very young infants and children tested were infected with the bovine type, or about 25 per cent. The total results indicated that about 2.5 per cent. of all tuberculosis existing in New York was due to bovine type of bacilli and caused probably by milk infection. In little children probably 10 per cent. of the total deaths from tuberculosis was due to the bovine type. The percentage of tuberculous glands in young children due to the bovine bacilli seemed to be at least 50 per cent. After January 1, only the following varieties of milk could be distributed in New York City. Milk for infants sold in bottles or sealed containers. These were of two grades: (*a*). Raw milk which had been certified or its equivalent. (*b*). A grade just below an inspected milk, either from tuberculin tested cows or pasteurized at a temperature of from 140 F. to 150 F. for a minimum of 20 minutes. (*c*). Milk for adults. This was milk from ordinary farms, shipped under ordinary conditions, but pasteurized very carefully. (*d*). Milk which could be used for cookng purposes. This was from the poorer farms, where only the simplest precautions were taken. This separation of milk was intended to concentrate effort on the portion of milk that required it and did not raise the cost of producing any grade more than was necessary. Dr. Park emphasized the fact that much more was being done by the Health Department at the source of supply, the farm. Inspection was carefully done and especially in those districts in which the farmers themselves were lax and careless in carrying out precautionary measures. Cleanliness of the can and the proper cooling of the milk are to be made subjects of great attention on the part of the Health Department. As to commercial pasteurization, Dr. Park is of the opinion that in comparatively short time such reforms will have been introduced that the method will be a great success. Under the control of the Health Board there is no reason to doubt that commercial pasteurization can be conducted effectively. The speaker pointed to the fact that some of the big pasteurizing plants were turning out milk containing very few bacilli. Notice has been drawn to the futile character of pasteurization as carried out by some of the smaller milk concerns. On the whole, however, Dr. Park thought that the outlook was good for commercial pasteurization in New York City.

Chemistry and Food Value of Milk was discussed by Professor H. C. Sherman, Columbia University. Professor Sherman first considered the economy of milk as a food. One quart of milk in gross food value equalled one pound of meat and three-quarters of a dozen eggs. Anyone who could pay 15 cents for a steak, or 22 cents a dozen for eggs, could equally well pay 15 cents for a quart of milk. The best grade of milk was as cheap as the cheaper cuts of meat or ordinary eggs. The housekeeper should be taught this so that she could see that it was not out of proportion to buy good milk for the baby and other members of the family. The comparison of a quart of milk to a pound of beef did not do full justice to the food value of milk because only the amount of nutrients was considered and not the form. That the forms of nutriment found in milk were of high food value was that one would anticipate from the fact that milk was the one article whose sole function in nature was to serve as a food. Chemistry offered at least two explanations of the generally accepted fact that milk protein was the best form to serve as tissue building material for the young mammal. It contained in ample proportions every one of the known amino-acid radicles needed by the body for the construction of the diverse forms of protein in the various tissues. Secondly, it contained phosphorus without purin in organic combination with the protein molecule and there was strong experimental evidence that such a phosphorus protein was of greater nutritive value than a corresponding mixture of simple protein with simple phosphate. Milk protein was less subject to putrefactive changes in the digestive tract and this was a further important point in its favor. The carbohydrates of milk had the advantage over most carbohydrates in being less subject to fermentation in the stomach. The fat of milk had the advantage over other fats in being already emulsified so that is was readily accessible to the now fully demonstrated fat splitting ferment contained in the gastric juice. For this reason the digestion of milk fat began in the stomach and went on more readily than that of most other fats. Some of the so-called inorganic elements of milk were just as essential to nutrition as to the protein and quite as apt to be deficient when food was left to chance and to the palate.

Cameret had estimated that of the three chemical elements, iron, phosphorus and calcium the baby got in the mother's milk no surplus over what was required to maintain a normal rate of growth. Recent studies had also shown that the typical family dietary did not furnish any great surplus of these elements and was not unfrequently deficient in one or more of them. Phosphorus and calcium were contained in milk in great abundance; iron was contained in small amounts but in forms of great nutritive value. Since the percentage of iron in cow's milk and in mother's milk were about the same, the child fed on modified cow's milk was apt to get less iron than could be obtained in the milk of a healthy mother.

Modification of Milk was the main subject of Dr. Rowland G. Freeman's paper. Dr. Freeman said in part that diarrhea in infants is dangerous and must be avoided by careful feeding. Ideas as to infant feeding are almost constantly changing and modifications of milk were continually altering. Modifications had to be modified. The type of cow from which the milk is obtained is an important factor in the bodily well-being of the infant. Intestinal disturbance is frequently caused by cream and especially by rich cream. A milk high in fat value caused disturbance and colitis but nevertheless fat is an important constituent of a baby's food.

There is a difficulty in fixing the amount of fat which an infant is able to digest, probably three per cent. is sufficient, but here the personal equation enters. Next in importance to fat comes sugar, but here again the personal equation must be considered and, of course, much must be left to the discretion of the medical attendant.

Roche taught that high proteids must be avoided in infant feeding but these are made larger now. The Germans do not use diluted milk to any extent and the old idea that babies could not digest starch food now seems to be controverted. If an infant does not gain in weight it may be taken for granted that something is wrong with the food. As bacteria in milk are more dangerous than slight errors in modification and as milk varies so greatly pasteurization is indicated as a safeguard.

Dr. T. Southworth in discussing the papers read, said the plan mentioned by Dr. Park of separating milk into different grades displayed clear common sense and would commend itself at all. He agreed with Dr. Freeman that if the weight of an infant remained stationary all was not well with it. Dr. Southworth said that in some instances he had witnessed good results from the use of German malt soup. Dr. Chapin said that the plan proposed by the Health Department to divide milk into different grades should be a valuable departure. He suggested, however, that the Board of Health should either arrange to certify or pass upon all the milk or hand over the work to the County Medical Society. It is not fair that the Board of Health should guarantee the milk of any one dairy. Either all should be guaranteed or none. He is of the opinion too, that physicians had gone too far in discriminating against fat in milk for infants. There are always fads in infant feeding and the pendulum had swung too far in one direction. If sufficient fat is not given to infants they will be rickety. Cream is not suitable because it varies too much but he would enter a protest against some of the present day teaching in opposition to fat in the feeding of infants. A change of food sometimes does good.

Dr. Emmett Holt thought that milk sugar is frequently the active cause of diarrhea in infants. He had recently a valuable object lesson on the ill effects upon an infant of a superfluity of milk sugar. Malt soup is the most easily absorbed of all sugar and the most liable to cause vomiting. Condensed milk is invariably an objectionable food for infants. Some young children are very sensitive to certain forms of sugar and especially to malt soup and a child must have remarkable digestive power to assimilate it. He had always been filled with wonder and also with envy at the digestions of German infants who are able to survive malt soup. He had not, however, found that the digestive capabilities of American babies are equal to this strain and as a rule, he objected to malt soup in that it caused intestinal disturbance.

As to the remarkable decrease of infantile mortality, which is so often vaunted in New York nowadays, he was skeptical. He had taken the trouble to collect statistics of the mortality rate of infants from diarrhea in the hot weather in New York twenty years ago and to compare these rates with those from the same cause last summer and he found that the rate twenty years ago was somewhat lower than during last summer. In fact, Dr. Holt is inclined to doubt that bacteria in milk is the main cause of summer diarrhea in infants. If this were so, how does it then occur that in London, in which city the milk supply is notoriously less cared for and guarded than in Chicago and Boston, the summer mortality from diarrhea should be less than in these American cities. In his opinion high temperature has more to do with summer diarrhea in infants than bacteria in milk.

Several other physicians joined in the discussion and perhaps the majority held the view that too great importance was paid to the presence of fat in the milk. At least the general opinion seemed to be that fat in infant's food is too greatly discriminated against at the present time.

PHILADELPHIA PEDIATRIC SOCIETY

Meeting, February 14th, 1911, J. Torrance Rugh, M. D., President.

Congenital Pyloric Stenosis.—Dr. H. A. Sutton, by invitation, reported the case of an infant aged six weeks, in whom symptoms of pyloric stenosis existed two weeks, when operation was successfully performed.

Dr. L. J. Hammond said the etiology, which at present was largely confined to a theoretic discussion, was most interesting. The most logical theory would seem to be that which involves a consideration of those factors entering into faulty embryologic development. The pylorus varied widely both in shape and structure, from the usual ring-shaped constricting band formed by a reduplication of the gastric mucosa through which circular muscular fibres were found in varying amounts and development; it might be oval or formed by two crescentic bands one above the other below the orifice, or it might consist of but a single crescentic fold. This inconstancy of formation would suggest the possibility of a vice in its development when there was added such an error in development as an unusually high position of the pyloric end of the stomach, producing angulation, and thus excessive connective tissue; hyperplasia in those cases where the pylorus consisted of a single fold, or twisting of the longitudinal fibres, might be responsible for reversion in their growth and development. Whatever the determining factor, faulty embryologic development seemed the most ready explanation. The condition was often associated with other developmental defects.

Dr. C. H. Weber said that he had seen the patient several times before operation. The presence of the loud systolic murmur and an enlarged liver, associated with vomiting, made the diagnosis uncertain; but later, visible peristalsis was elicited, the vomiting became projectile and the diagnosis was readily made. The presence of the congenital heart lesion could possibly be considered a point in favor of the theory of congenital origin of the hypertrophy. Dr. Weber thought that in spite of the good results obtained by medical treatment, especially as reported in the English statistics, the tendency would be towards surgical intervention. Many cases of recovery after operation were being reported, and no doubt results would continue favorable in early cases. Medical treatment required very careful dietetic care and was a long, tedious process, possibly lasting for months. Dr. Weber said that he referred only to the type of cases having the anatomical conditions which were found in the patient under discussion.

Dr. J. F. Crozer Griffith urged the importance of giving medical treatment a fair trial. There were cases such as the one reported that evening and another recently shown at the society by Dr. Lowenburg, which Dr. Griffith had also had the opportunity of seeing in consultation, where there was no doubt about the advisability of operating. There were many other cases, however, where the question of operating was a most difficult one to decide. Within a few months he had been called to see a child in whom symptoms were typical; a few days later he was asked to come hurriedly, with a surgeon, for operation. It was found that a very small amount of fecal matter had appeared in the stools and it was decided to wait twenty-four hours. The child was now entirely well without operation. Admitting that hypertrophic stenosis was congenital and the infant remained perfectly healthy for several weeks, suddenly showing symptoms of stenosis, it was evident that something more than the hypertrophy must be present to account for the condition. It was clear that there existed in addition to the hypertrophic stenosis, or perhaps existing entirely without it, a condition of pyloric spasm, and in some cases also of swelling of the mucous membrane. It was probable that in nearly every case of hypertrophic stenosis a certain element of spasm was present, and it must be true, from the large number of cases which had recovered without operation, that in a great many spasm existed alone, or if there was any hypertrophy it was of a degree which by itself did not produce symptoms. Dr. Griffith believed that symptoms supposed to describe each variety of case could not be depended upon and the question of operation often became puzzling. In view of the high mortality which had attended the operations recommended for the disease, one must hesitate before advising any one of them, while it was equally serious to delay operating so long that the strength of the infant was weakened to an extent which removed most chance for recovery after operation.

Dr. Harry Lowenburg said that the whole question was one of diagnosis, the treatment being almost invariably surgical once the diagnosis was made. Most cases died because they were treated as marasmus, the profession being insufficiently informed as to the frequency and symptomatology of the condition. All cases of persistent vomiting associated with wasting should be regarded as pyloric stenosis until it could be proved that they were not. It was not safe to temporize long. Dr. Lowenburg believed that no case of true hypertrophic pyloric stenosis ever recovered without operation. The infant should be placed in the best possible surroundings and great care exercised in preparing its food; if, in spite of this, it lost weight daily, operation should not be delayed. If weight and strength remained stationary or it gained ever so little, they could afford to wait. When a pyloric tumor could be palpated operation was indicated at once. The inability to palpate a tumor was often due to rigidity of the abdominal muscles from crying or straining. Dr. Lowenburg could overcome this by a few whiffs of chloroform, just enough to still the infant; he recommended this as a routine procedure in these cases.

Dr. Miller said that he had seen five or six cases of so-called hypertrophic pyloric stenosis treated by careful dietetics and lavage with recovery. In every case the principal cause of the symptoms was spasm; in some it was pure spasm; in others, spasm plus some hypertrophy of the muscular fibres of the pylorus; and in others absolute occlusion of the pylorus due to true hypertrophy. To decide when to operate was the great difficulty. Dr. Miller advised postponing the operation so long as the baby did not lose in weight and continued to pass fecal matter by the bowel. Patient, persistent dietetic experimenting would do much. In the treatment he advised feeding only when the stomach was empty, to be determined by the passage of the tube, a quantity that could be retained without vomiting—not too much. The presence of reversed peristalsis was not a sign of pyloric stenosis alone; it might be present when no true stenosis existed, and the same might be said of projectile vomiting and other classic symptoms of the affection.

Epidemic Poliomyelitis.—Circular issued by the American Orthopedic Association and the American Pediatric Society in reference to acute epidemic poliomyelitis, and addressed to health authorities and boards of health.

Anterior poliomyelitis is, so far as known, a communicable disease, being communicated from one patient to another and also by means of a third person. It occurs in epidemics and tends to spread along the lines of greatest travel. There is reason to believe that it is prevented from spreading by quarantine, and with the very great prevalence of the disease in the summer of 1910 it is the opinion of this committee that it is essential that it should be made a reportable disease in all states in order that its presence may be detected and its spread guarded against.

Of particular significance are the so-called abortive cases, where indefinite ailments occur in children in communities where frank paralysis also exists. These abortive cases of infantile paralysis are undoubtedly a source of infection, and their record and study is of much importance. In a community where cases of infantile paralysis occur cases of illness with sudden onset of fever and meningeal symptoms should be closely watched and regarded as possibly infectious. In such cases even recovery without paralysis does not establish the fact, that the case was not abortive infantile paralysis.

All cases of infantile paralysis should be strictly quarantined, sputum, urine and feces being disinfected, and the same rigid precautions being adopted as in scarlet fever. This quarantine should, in the opinion of the committee, last for four weeks in the absence of definite knowledge as to when the infection ends. Children from infected families should not be allowed to go to school until the quarantine is abandoned. The transportation or transfer of acute cases in public conveyances should be strictly forbidden. It would be very desirable to adopt provisional quarantine measures in suspicious cases in a community where an epidemic prevails. The report of all cases of infantile paralysis to the public health authorities should be enforced by law, and all deaths from this cause should be properly described and registered. A careful study of epidemics by public health authorities is strongly advised.

(Signed) ROBERT W. LOVETT, M. D., Chairman
HENRY KOPLIK, M. D.
H. WINNETT ORR, M. D.
IRVING M. SNOW, M. D., Secretary

the gas bacillus in the intestinal tract are unsuitable for the growth of the dysentery bacillus.

The gas bacillus is present in small numbers in the stools of some older bottle-fed babies which are apparently in perfect health, and this might at first sight be construed as an argument against the specificity of the organism in cases of diarrhea. It will be found, however, that this inconsistency is more apparent than real, for it is well known that other pathogenic organisms, *e. g.*, the pneumococcus, may exist as apparently harmless saprophytes in the body. Those cases in which we regard the presence of the gas bacillus as significant and as the etiological factor of the disease give a history of diarrhea of greater or lesser severity, and usually of rather long standing, so that the intestinal tract has had ample opportunity to rid itself of the majority of its bacterial flora. The fact that the gas bacillus finds a suitable environment for its rapid proliferation in a certain number of these cases lends additional evidence to the etiological relationship of the organism.

The diagnosis of diarrhea due to an infection with the gas bacillus can be made by the means described above within twenty-four hours, at the end of which time it is possible to begin treatment with a definite idea as to the etiology of the condition. The management of all acute diarrheas during this period of twenty-four hours while the cultures are developing and while the diagnosis is being made is practically the same, namely purging and starvation.

Thus far the application of the method as outlined above and the subsequent treatment with buttermilk has been limited to relatively few cases, but the results obtained have been uniformly satisfactory and would seem to justify the belief that the gas bacillus is the etiological factor in a small group of the acute diarrheas in infants.—*Postgraduate.*

Infectious Diseases

Under the Charge of

ST. GEO. T. GRINNAN, M. D.

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Suggestions in Connection with Municipal Measures of Prevention of Invasion of Infectious Diseases.—Dr. John Banister, Medical Corps, United States Army, predicts that before long the general and State government will assume control of the sanitary conditions of our population, both urban and rural and a rigid application of the teachings of modern sanitary science will be enforced, (*Western Medical Review*, April, 1911). Dr. Bannister points out that to be effective any sanitary control must be upheld in every detail by the firm unyielding hand of the law. In connection with this subject, the water supply should receive very strict attention. It is an axiom that the typhoid rate of a city is in proportion to the condition of its water supply in the matter of pollution. To a marked degree is this true of such diseases as diarrheas, dysenterys and cholera when that disease is epidemic.

Sanitary experts, the world over are agreed that river water in a well settled district, subject only to sedimentation is not fit for drinking purposes. The continuous sand filtration, which has stood the test of experience, will remove 99 per cent. of the contained bacteria. Cities, which some years ago were hot beds of typhoid fever have now almost exterminated the disease by the adoption of the sand filtration. As instances of this, Dr. Banister points to London, Hamburg, Berlin and Lawrence, Mass.

The removal and treatment of wastes of a city is so important in the prevention of infectious diseases that the scientific handling of this problem will play a very important part in future work along this line. The pollution of streams is so general and the prevention of pollution so disregarded that our rivers and larger streams serve as one of the most constant bearer of disease from one individual to another. Professor Dunbar calculated that with a population of 10,000 a ton of feces and over ten tons of urine are discharged every day. On this basis, Dr. Bannister calculates that Omaha is discharging into the Missouri 124 tons of feces and 124 tons of urine per day. Throughout the civilized world the impression is fast gaining ground that the excessive pollution of rivers by sewage should be prevented by law. In many cities in England the sewage is subject to treatment before being discharged into running streams.

The prompt removal of garbage and solid refuse from the city limits or prompt burning in an incinerating plant has not been sufficiently carried into practice. The guilt of the house-fly is given due consideration. Droppings of horses and cattle furnish the favorite breeding material for flies. Every effort should be taken therefore by the health authorities to destroy the breeding facilities of flies.

The work against infectious diseases is being more recognized every day and the time is near at hand when a very great reduction will be made in the number of infectious diseases of every kind.

The Serum Treatment of Pneumonia in Infants and Young Children.—Dr. E. Mather Sill, (*Medical Record*, April 22, 1911), points to the statistics on tuberculosis and pneumonia which shows a steady decrease in tuberculosis death rate and steady increase in the mortality from pneumonia. There has been a decrease in the death rate in all other diseases excepting cerebro-spinal meningitis. The same condition prevails even in children under five years of age.

Taking cognizance of the increase in the death rate from pneumonia, Dr. Sill has begun the use of serum for pneumonia. The serum used was a polyvalent composite serum obtained from diphtheria immune horses that have been subjected to a prolonged and progressive immunization with a mixed culture of the pneumococcus taken from several strains of pneumococci from a number of cases of pneumonia in different stages and of different degrees of severity.

The serum was injected subcutaneously in doses of 10 cc. at varying intervals, depending upon the symptoms and effect it had on the patient. In some cases one injection sufficed to relieve the patient, while in other cases repeated injections made every day or at longer intervals were given and not always with favorable results. Twelve cases were treated with the serum, eight males and four females. Two cases died, one of complicating empyema and one of extensive double pneumonia marasmus and cardiac failure (mortality 166 per cent). Two cases besides these that died were not helped by the serum, but the other eight cases were all more or less improved and in some cases the effect of the serum was marked. Dr. Sill believes that the path towards the pneumonia specific is more or less mapped out, and that a vaccine or polyvalent serum will be definitely selected. The serum should be made in a concentrated form to prevent serum sickness. It seems reasonable that the polyvalent composite serum is at least as advanced in therapeutics in the right direction. It is important that the vaccine be used early in the disease.

A Frequent Cause of Infectious Disease.—Dr. A. A. Potts, (*Interstate Medical Journal*, Feb., 1911), calls attention to the fact that cavities in teeth harbor germs of infectious diseases long after the child has recovered from the disease. He calls attention to the fact that long after the diphtheria bacilli have disappeared from the throat and other mucous membranes the germs lie secluded within cavities whose walls are not bathed in blood serum carrying anti-toxine or therapeutic agents. It is the physician and not the dentist who first sees the child and if the physician is careless and does not recommend dental service, the child is too often allowed to suffer irreparably before receiving such services. The physician should not leave to the mother the judgment, but the physician should be careful to examine the teeth in all cases of tonsillitis and stomatitis or minor ills. Cavities in teeth and cavities and pockets between teeth harbor not only pathogenic organisms, such as cause diphtheria, scarlet fever, pneumonia and other diseases but saprophytic organisms as well. The interchange of apples, of chewing gum and other articles of food among children thus transferring the bacteria from one child to another.

There is a constant absorption by the mucous membrane of the mouth and throat, as well as swallowing the poison. We have here a ready cause of malnutrition with its consequent lack of resistance. It is not improbable that cervical adenopathy as well as tonsillar disease may have its orgin in carious tooth cavities. The germs of infective granulomata and tubercle bacilli are found in great frequency in tooth cavities. From the carious tooth cavity the germs pass to the gum tissues or through the root channels into the deeper tissues and there set up growth. Alveolar abscess is regarded as somewhat insignificant, but should be treated as osteomychitis.

If there was mouth toilet there would be much less tonsillitis. An efficient antiseptic mouth wash and proper use of the tooth brush is an important factor as removing the cause of infectious diseases. Poor health is the one term which expresses the sum total comprising the poor hygiene at home and at school.

Poliomyelitis, Pathology and Bacteriology, Etc.,—Dr. Wm. H. Peters of Cincinnati, (*The Lancet-Clinic,* March 25, 1911), discusses the pathology and bacteriology of poliomyelitis quite extensively. He points out that the disease is of a specific infectious malady characterized pathologically by general toxemia effecting the pureuchyma of the heart, liver and kidneys and lymphoid tissue of the body, but expending itself locally on the structures of the cord. The infectious agent is located in the perivascular lymph channels of the anterior horns, the grey matter and white matter and pia. The brain stem and ganglia may be involved. Various bacteria and especially certain cocci have from time to time been isolated in cultures obtained by lumbar puncture or from specimens of the central nervous tissue removed by autopsy. The filtrates are highly potent and 0.01 cc. suffices to cause paralysis in monkeys after usual inoculation period, when injected into the brain. Active immunity is established by an attack of poliomyelitis. The serum of a human being who has gone through an attack of poliomyelitis is capable of neutralizing the virus of poliomyelitis. An abortive attack confers immunity. Dr. O. V. Hoffman, (*The Lancet-Clinic*), March 25th, 1911), discusses the possible relation of poliomyelitis to beri beri. The fact that beri beri being a paralysis of the spinal type, and the frequency of poliomyelitis in countries where beri beri is common, call attention to the close relation of the two diseases.

The prophylaxis of poliomyelitis is a question that has not been sufficiently appreciated. Dr. Steinhardt, (*New York Medical Journal,* April 15, 1911), discusses very fully the methods of preventing the disease. The urine should be disinfected with hexamethylemine. The stools treated as in typhoid fever. The nasal passages and secretions treated with antispetics. Paper handerchiefs should be used and immediately burned. The bedding and garments should be boiled, as also the patient's eating and cooking utensils. The doctor in calling should wear a cap and gown, just as he would wear as if he were attending scarlet fever. A warning sign should be placed on the door. Children, in whose family the disease exists should be excluded from school. Dr. Steinhardt emphasizes the fact that a competent masseur should work under the direction of a physician. Massage keeps the muscles in good condition and helps muscle nutrition. The massage must be kept up for two or three years to get the best results.

Diseases of the Skin and Uro-Genital System

Under the Charge of

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Purpura.—Dr. J. S. Thatcher, (*New York Medical Record,* April 15th, 1911). After discussing and classifying all those conditions that have an abnormal tendency to hemorrhage either free or into the tissues, the author arrives at the consideration of two groups which he thinks worthy of thorough and broad investigation, especially as to the coagulability of the blood and the study of certain anatomical elements of this fluid.

While petechial eruptions are not infrequent in diseases of the blood vessels and chronic derangements of the spleen, liver, as well as in drug poisoning, and in quite a number of infectious diseases, in which cases we have to deal with more or less definite etiological factors, their appearance in nervous purpura and hematidrosis is less frequent and not understood as well.

The groups referred to above however, consist of two definite and distinct conditions, namely, a hereditary tendency to hemorrhage (hemophilia) and idiopathic hemorrhagia.

In hemophilia, hemorrhages from the surfaces are chiefly to be considered, other symptoms usually being absent.

The hemorrhagic diseases of the new born are often spoken of as hemophilia, but as they are thought to be of infectious origin, the name hemophilia tends to confusion.

In the second group minute petechiae to large ecchymoses, polymorphous erythemata and arthritides, crises of abdominal pain, accompanied by vomiting and diarrhea, hemorrhages of the alimentary canal, the respiratory and uro-poietic system and nephritic complications form the clinical features we find.

In true hereditary hemophilia the various experiments have shown that the coagulation time of the blood is increased; in purpura, on the other hand as a rule it is normal. In purpura with hemorrhages the number of platelets is generally reduced and the coagulation time increased. In connection with the first mentioned group the author cites two cases, that deserve to be mentioned.

I have recently had two cases with such (hemorrhagic) eruptions, fine, bright fairly profuse, following sore throat, and followed by speedy and complete cure without much assistance. In each case streptococci were abundant in the throat and in one a pure culture of streptococci was obtained from the blood. The treatment was simply local, of the throat, in the case in which we obtained streptococci from the blood, vaccines were prepared, but before they were ready the patient was improving and they were not used.

In another patient an unusual mouth infection was followed by a profuse eruption partly hemorrhagic. The case was one of whooping cough in a child and moderate doses of antipyrine had been taken. The mouth infection in this instance took the form of an abundant, furry white pseudo membrane and spread over nearly the whole mucosa of the mouth and fauces. The elements of this growth seemed bacillary, but the mass mycelial. Its appearance was shortly followed by an abundant eruption over various parts of the body, of hemorrhagic macules, and papules, with some bullae. Recovery was prompt and the child has been since, as she had been before, perfectly healthy. It was not proved, but it seemed probable, that this hemorrhagic eruption of unusual form was due to a toxemia arising from the peculiar mouth infection. On the other hand, a petechial eruption is sometimes the first distinct warning that a patient may be in a very serious condition. It may be the clue leading to the discovery of a virulent septicemia or may indicate the serious type of an endocarditis.

Report of a Case of Congenital Cyatic Degeneration of the Kidney.—Dr. Brooker Mills, (*New York Medical Record*, April 15th, 1911). J. B., aged 14 months, was admitted to the wards of the Medico-Chirurgical Hospital on June 28, 1910, in the service of Professor Hollopeter through the out-patient department, the family and previous history of the patient were negative, and apparently the only abnormal condition present was an enormous growth on the left side of the abdomen, which the mother stated had commenced seven months before, when the child was seven months old, and had been steadily progressing.

After remaining in the hospital three weeks the child was operated upon by Professor William L. Rodman assisted by Drs. J. Stewart Rodman adn milk, and for the rest, freshly sterilized milk, prepared specially for each set of successive inoculations. The results are therefore directly comparable,—time, temperature and material being the same for each set of experiments. Such results are not at all surprising, the reason for the selective growth being simply a survival of the fittest, or, to state it differently, a destruction of the activity of the numerically weak by the numerically strong germs. Raw milk contains an excess of lactic acid germs and these simply destroy or consume, or cause the destruction and elimination of the other kinds, and as pasteurized milk contains only a relatively few, if any, live lactic acid germs, and these being dormant or very inactive, allow the germs of putrefaction to overpower them.

In milk that has undergone putrefaction, a large number of dead germs are always present. These dead germs often give rise to formation of peculiar toxic substances similar to animal poisons, ptomaines, toxins, etc. Putrefactive fermentation of milk introduces dead matter into the milk, while lactic acid fermentation decomposes and eliminates dead matter from the milk. Pasteurizing milk therefore prevents the lactic acid fermentation and prepares the milk for putrefactive fermentation. Sterilization prevents both lactic and putrefactive fermentations.

He asserts that he is firmly convinced, as a result of the large amount of work done by many experimenters and the results of his own research and investigation work, that commercial pasteurization, per se, without many other necessary safety guards, often produces a dangerous milk. Old, stale, dead, pasteurized milk, is not fit for human or animal consumption; in fact, it is more dangerous than the same milk, of the same age, that has not been pasteurized. He firmly believes that it is necessary to more closely watch the distribution of pasteurized milk than the distribution of similar raw milk. Being fully aware of the most excellent results that have been obtained in the distribution of pasteurized milk in Chicago, New York and other cities, he is willing to go on record that these good results were not due to the pasteurization of the milk per se, but were mainly due, if not exclusively, to the selection of the dairies, the selection of the milk, to its method of distribution, using clean, individual containers, lots of ice, to the distributing of fresh, clean, pasteurized milk, all summed up in the care and attention given to its production and distribution from cow to consumer. He believes that even better results would have been obtained if this fresh, clean milk had not been pasteurized, but had been distributed as fresh, clean, raw milk.

Professor Bernhard Boeghild, of the Royal Danish Agricultural College of Copenhagen, one of the greatest authorities on milk, who introduced the model system of milk control in Copenhagen and other Danish cities, which system has been very extensively followed by municipal authorities throughout the world, during his lecturing tour in this country, stated that it is necessary to heat milk to about 190 degrees F for not less then ten minutes in order that it become properly pasteurized. This milk is chilled to 40 degrees F and kept at that temperature until distributed. Professor Boeghild believes that it is of great importance, in using pasteurized milk, not to keep the milk longer than one day.

Dr. Gudeman has made a number of toxicity experiments, using raw milk, pasteurized milk and sterilized milk and their respective sera, from which he draws the following conclusions: 1. That serums from raw milks five to seventeen days old are not fatal to guinea pigs, nor do they cause severe functional disturbances when injected in one-half cc. doses. 2. That the serums from pasteurized milk five to seventeen days old when injected in one-half cc. doses, cause severe functional disturbances and are generally fatal to guinea pigs. 3. Guinea pigs that have received injections of serum of raw milks seem to be immune to single injections of serums of pasteurized milk within twenty-four hours of the first injection. The injections of serum from raw milk seems to increase the resisting against serum from pasteurized milks for a limited time. From the results of a few feeding experiments, he concludes as follows: 1. Feeding dogs with old raw milk in strong state of lactic fermentation causes no appreciable functional disturbances. 2. Feeding dogs with old pasteurized milk causes strong functional disturbances shown in loss of weight and appetite accompanied with vomiting and diarrhea with soft and putrid feces.

Some interesting results were obtained with the feeding of a few children, changing the diet from pasteurized milk to raw and sterilized milk, these having been specially prepared: 1. Four children, aged six months to two years, suffering from diarrheal troubles, summer complaint, were given three times a day one ounce of sterilized milk, which had been inoculated with lactic cultures and then allowed to stand six days. Great improvement was noted inside of 24 hours and full recovery within 48 hours. Examination of feces originally showed a tremendous number of putrefactive germs, radically diminished after 24 hours. These were nearly absent about 72 hours. 2. Four other children, aged eight months to two and one-half years, suffering from diarrheal troubles, summer complaint, were given daily for two days, three and one-half ounces of buttermilk serums four days old, the buttermilk having been made with cultured lactic germs. Within 24 hours, great improvement was seen in all cases, the feces becoming harder and less putrid.

In conclusion Dr. Gudeman emphasizes these important facts:

1. The ill effects due to the feeding of commerically pasteurized milk is not alone due to the direct action of the putrefactive germs but partly to the toxic principles and decomposition products in the milk arising from the decomposition of the germs themselves.

2. That lactic acid and other acid forming germs seem to destroy and eliminate other germs, while the germ of putrefaction and non-acid forming germs seem to destroy but do not eliminate the other germs.

3. Raw milk becoming sour within a short time condemns itself, and the acid forming germs are the safety guards indicating to the consumer the age and the actual condition of the milk.

4. Pasteurized milk unless fresh, is often the cause of a great deal of trouble because it lacks the souring property as an indicator.

5. Sterilized milk is a safe milk as it is free from living germs and their products of decomposition.

In a lecture once delivered by a celebrated physician he has this to say in regard to the treatment of infantile scurvy: "There is absolutely nothing in the whole range of therapeutics more striking than the effects which you will get from a radical change of diet in infantile scurvy, and there is nothing in regard to which you will deserve or obtain more credit in practice. But, on the other hand, there is nothing in regard to which, if you fail to recognize the condition, you will deservedly get more blame, because it is a disease which is quite within the compass of medicine absolutely to cure if it only be recognized."

BOOK REVIEW

Education How Old The New, by James J. Walsh, M. D., Ph. D., Litt. D. Dean and Professor of the History of Medicine and of Nervous Diseases at Fordam University School of Medicine; Professor of Physiological Psychology at the Cathedral College, New York. New York, Fordam University Press, 1910.

We have had the pleasure, heretofore, of reviewing books from this author, who always writes with an exceedingly instructive pen. This present work, "Education How Old The New" is well worth careful reading. He contributes two or three points of view which it is advantageous to have emphasized in our American intellectual life of today. His first essay on education takes flat issue with the common theory that everything represents astounding progress at the present day, that we have nothing to learn at any point from the past, and that we are justified in fatuous self-satisfaction with everything about the present. So far is this from being true, as Dr. Walsh shows very clearly, that there has never been a great civilization in the past which on some points or other does not stand ahead of our civilization today; progress on the whole has been rhythmic, long periods of retrogression succeeding the periods when the world has gone forward. With this statement of the facts I entirely agree, although I feel that on the whole, it is undoubtedly true that the movement has been forward. But it would be quite impossible to show any advance among any of our own people of the present day over certain sections of society in, for instance, the Judea of the great Hebrew prophets, in the Athens of Pericles, in the thirteenth century in various parts of Western Europe. The essay on "The First Modern University"—that of Alexandria—is capital; and the author's appreciation of mediaeval scientific universities, again, contains things that we as a people need to learn, including, by the way the fact that in Spanish America excellent work was done in great universities before, in what is now our country, there was any institution of learning ranking above a second-rate school. These universities in Spanish America did what is really by far the most telling of all intellectual work—that is, they did work in actual productive scholarship before in the English-speaking colonies such a thing as productive scholarship was known. This will doubtless be brought out when we have a professiorial interchange with Spain as we now have with Germany. Again, in the essay on "Ideal Popular Education" introduced by an admirable quotation from Plato, Dr. Walsh emphasizes some of what the best-informed men are now agreed upon in regarding as the greatest needs in modern education, and especially in our American education.

American Association for the Study and Prevention of Infant Mortality. Transactions of the First Annual Meeting held in Baltimore, November 9, 10, 11, 1910. Pp. 356, price $3.00.

This is an excellent collection of the papers, which were read at the Baltimore meeting of this Association. Thirty-three papers are published with full discussion of each; reports of affiliated societies and an illustrated catalogue of exhibits.

This association is the outgrowth of the Conference on Prevention of Infant Mortality, held by the American Academy of Medicine at New Haven, in 1909, and the next annual meeting will be held in Chicago, next November.

This volume contains a list of the officers, directors and committees since its organization, a full report of the meeting including the opening addresses.

One of the best papers in the volume is Wilbur C. Phillips' contribution on Infants' Milk Depots and Infant Mortality, and the address by the Chairman of the Prevention of Infant Mortality section, Dr. L. Emmet Holt, is also a valuable contribution. Space prevents a more detailed account of this volume, which is a valuable addition to any library. Checks may be sent to Miss Gertrude B. Knipp, Executive Secretary, 1211 Cathedral St., Baltimore, Md.

Merck's Manual of the Materia Medica, (fourth edition).

A ready reference pocket book for the physician and surgeon. Containing a comprehensive list of chemicals and drugs—not confined to "Merck's" with their synonyms, solubilities, physiological effects, therapeutic uses, doses, incompatibles, antidotes, etc., a table of therapeutic indications, with interspersed paragraphs on bedside diagnosis, and a collection of prescription formulas, beginning under the indication "abortion" and ending with "Yellow Fever;" a classification of medicaments; and miscellany, comprising poisoning and its treatment; and an extensive dose table; a chapter on urinalysis, and various tables, etc. Merck & Co., 45 Park Place, New York. 1911. 493 pages. Sent on receipt of forwarding charges of ten cents, in stamps, to physicians, or to students enrolled in any college of medicine, in the United States.

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PEDIATRICS

Vol. XXIII AUGUST, 1911 No. 8

EDITORIAL

HOT WEATHER AND YOUNG CHILDREN.

The dangers to which young children are exposed in hot weather are many and varied, and it will not perhaps be untimely to refer to a few of these perils and give some words of warning. Grown up persons suffer from the heat, but they are free agents and are more or less able to please themselves, and unless their work or duties call them, are not compelled to submit themselves to the discomforts and dangers of a broiling sun and a humid atmosphere. With children the case is quite different, they must do as they are told, or if infants, must go where the fancy of their mother or caretaker leads. Small children are very sensitive both to heat and cold, but while a mother would not dream of permitting her baby to breathe the outside air on an ordinary cold day she has no scruples at sending the little one out in the very hottest of weather often without sufficient protection to either head or neck. This ignorant fear of the child taking a chill is carried to absurd lengths, and from a dread of this calamity happening the unfortunate infant is frequently in the height of the summer enveloped in the thickest and heaviest clothing. Where one child can be seen who may possibly have taken cold dozens can be seen who are palpably suffering from the effects of too much clothing. The clothes worn should be light in color and weight, and loose enough to admit of free action to the skin. Of course to deny that fresh air is healthful to children would be absurd, and under favorable conditions the more of it they have the better it will be for them, still discretion should be observed and the custom of sending out very young children for hours at a time subjected to the full glare of the sun and without ample protection against the force of its rays cannot be a wise one. During the hottest part of the day little children are safer in a well ventilated cool room, unless they chance to live close to a park or square where they can play or rest under the shade of big trees. For those whose parents can afford the expense, removal is the best remedy. If children could be sent away from the crowded towns as soon as the hot weather begins they would be spared much sickness. However, after all it is on the poor and their children that the effects of an excessively high temperature press most cruelly. Wholesale transportation to the country cannot be resorted to in their case; these children are compelled perforce to stay in the hot, chooked up towns, and as not infrequently happens to live in a building containing an average of ten persons to a family, breathing the stifling, vitiated air that so limited a space renders inevitable. But infantile mortality must not by any means be put down wholly to the direct effect of heat. The trouble due to excess of temperature, both with the poor and the well-to-do is more often owing to errors of hygiene and diet than to the heat itself. The largest percentage of the ailments of children in the summer season should be laid to the charge of improper feeding. The mother or those in care of children, through mistaken ideas of kindness, or to keep them quiet will give them solid food, as meat, vegetables and fruit. The natural sequel is an outbreak of infantile diarrhea, which regularly claims its victims by the thousands, after the first few weeks of warm weather. Here again it is the children of the poor who are the chief sufferers and among whom the largest infantile mortality obtains. Poor people and their children by reason of their poverty have to eat whatever food they can get, however objectionable it may be. There is a widespread belief too, that it is dangerous to allow infants to drink cold water in the hot weather. This is quite an erroneous notion, water both internally and externally is a necessity, and a young child should be allowed a moderate quantity of water to drink, and babies should be bathed in cold water two or three times a day when possible.

Years ago this Journal advocated the plan of converting the basements of public schools, during the summer months, into public baths for children. These buildings are unoccupied for three months and but trivial structural alterations would be needed to convert them into bath houses. This plan if carried out would prove a great boon to the poor, as water in sufficient quantities for bathing purposes is, in many instances sadly lacking. To yet another cause of illness in the summer time it may be as well to refer briefly. The consumption of ice cream, although it does not concern infants, yet it is a fruitful cause of sickness in children who buy it from street venders. This delicacy, sometimes termed "American's national luxury," is, when manufactured under proper sanitary conditions, harmless enough, besides being pleasant and refreshing on a hot day. Unluckily the proper sanitary conditions are frequently not closely observed, and the concoction is a vehicle of all kinds of dirt, carrying in it the germs of fatal diseases. Ice cream, to be harmless should be made with the utmost regard to cleanliness and in vessels that will not easily oxidize. The product, as sold on the streets of New York and other large cities, is unfit to feed even to youngs pigs—much less to children, and the municipal authorities should take steps to prevent its sale.

THE PROBLEM OF MILK PRESERVATION VS. TUBERCULOSIS.

We are all aware of the ingenious theory that Behring propounded: that in the milk of the human , in cows, and even of other animals there were present anti-bacterial, antitoxic, and other protecting bodies, which, speaking particularly of the problem of tuberculosis, might be utilized in the struggle against this one infecting micro-organism. It is pretty widely known how he proposed to hyperimmunize young cows and thus increase the amount of these antibodies in the milk and thus eliminate entirely the scourge of infant tuberculosis which he thought was largely a matter of infection from bovine sources. Elsewhere in this issue will be found an interesting and instructive paper by Dr. Potter of Syracuse, dealing with the question "The Portals of Entry of Tuberculosis in Children," well worth careful attention.

The cautious scientist has not accepted Behring's views without reserve. Bearing in mind the proven to be untrue dictum of Koch concerning the non-infectiousness of Bovine tuberculosis, many have taken a middle ground, and while recognizing the digestive tract as a possible route of infection they have devoted their energies to the study of the more direct and urgent features in tuberculous infection.

But apart from the subject of tuberculosis and milk, the phase of the subject that regards milk in the light of a living fluid, and that interference with its physical, chemical and zymotic characters is bound to be reflected in conditions of disturbed nutrition, this side of the problem is worthy of special attention.

Flugge, it may be remembered, contended, in opposition to Behring, that there was no antibodies in milk, but even if these be eliminated from the discussion, the question remains, does a modification of the milk brought about by boiling, by pasteurization, or by antiseptics, so alter its character as to render it a different fluid, and if so, to what extent?

It is surprising to read the researches that have been undertaken and which have arrived at contradictory conclusions. The dictum that boiled milk is a cause of infantile atrophy and Barlow's disease represents the conclusions of one series of investigators, notably Huebner and Barlow himself; while such excellent observers as Budin, d'Espine and Variot in careful series of experiments, maintained that such was not the case. Scorbutus has been the scare line for others who would have no boiled milk (Fruitnight, Netter), while many other equally competent men pronounce such views chimerical. All of which serves to accentuate the view that as yet we are not in a position to make positive statements regarding the action of boiling on the vital principles resident in milk. Naturally the grosser features of sterilization, etc., are not under discussion in this place.

The most interesting feature of the discussion at the present time resolves itself about the use of an antiseptic in milk that will least interfere with the hypothetical antibodies of Behring and will serve the great function of keeping the milk sterile and not interfere with the digestive organs or with the physico-chemical properties of the food products. Behring maintained that formaldehyde was just such a body. Its structural simplicity; its being a constant product in all constructive metabolism in plants, and its pronounced antiseptic action, which it undoubtedly has and exercises in living metabolic activities, all lent a certain air of plausibility to the argument and stimulated another great series of researches, with customary contradictory conclusions.

It is certain we believe that the action of the Consulting

Committee of the Hygienists of France whereby they condemn the use of formaldehyde as a milk preservative, will have the sanction of the major body of hygienists who have taken up this question, but it is by no means to be assumed that the discussion has been settled.

At all events we are much nearer the solution of the problem of milk preservation, negatively if not positively, today than when Behring promulgated his very attractive "antibodies" as important factors in the milk problem.

INFANCY AND TYPHOID FEVER.

Only within recent years have pediatrists believed that children could have typhoid fever, it being almost the only affection that the text-books rules out on the score of age alone. Now that it is clearly seen that children are but relatively immune, the more interesting questions arise as to the causes of even this comparative infrequency. Breast fed children, Erlich taught, were supposed to obtain some immunizing substance from the mother's milk, but the incident of recovered typhoids of mothers is too small, and again typhoid is apparently a disease that imparts a minor degree of immunity to further attacks, hence the mother's milk immunity theory is in need of revision or further extension. It is in the element of diminished opportunity for infection that a more rational interpretation is to be sought. Breast fed infants naturally have very slight opportunity for infection, and for the most part the food of artificially fed children is prepared under such conditions that would preclude the dangers of infection. It is quite certain that the prepared foods of the market have this in their favor that they are originally carefully sterilized. It is only through subsequent mismanagement that they can constitute any factor in the infection of babes.

From experience, the diseases from which typhoid fever in infants is to be differentiated are pneumonia, nephritis and colitis. The pneumonias of low grade, particularly of the central variety, are particularly perplexing; minor forms of chronic nephritis, particularly in later stages of the disease and low grade in character, are, at times, difficult to diagnose and in certain varieties of colitis, insidious in their onset, mildly progressive, with abdominal tenderness and diarrhea, the differential diagnosis is well nigh impossible—they approach some of the paratyphoid infections.

The clinical course of the disease is well recognized to be very distinct from that seen in adults. The most classical and gradual rise in temperature is lacking and the intestines do not bear the brunt of the attack. The meninges and other nervous structures seem to be the parts most frequently affected. Skin eruptions, particularly many anomalous forms, are not uncommon, and many pediatrists have pointed out that since the introduction of the newer synthetic antipyretics the number of anomalous skin eruptions had increased. This is particularly true for the antipyrine group and its related products. The diagnosis is extremely difficult. Cultivation of the organism from the feces by the Hiss method is helpful, but the Widal reaction offers the best diagnostic aid; barring laboratory aid the diagnosis may at times be impossible.

TETANY AND THE MYOTONIA OF INFANCY.*

M. Hochsinger of Paris describes a condition which he defines as a myotonia of nurslings and which he regards as a neurosis of young infants, differing materially both from tetany and from the pseudo-tetany of Escherich.

Tetany is essentially characterized by intermittent and tonic contractures affecting chiefly the muscles of the hands and feet, and accompanied by hyperexcitability of the motor nerves and muscles. This hyperexcitability constitutes, in the author's opinion, the most essential condition of tetany, and all other symptoms must be subordinated to it. The infants do not lose consciousness. The most important symptom of this hyperexcitability is the phenomenon of Chvostek, which consists in the sudden contraction of the orbicularis palpebrarum on tapping over the site of the branches of the facial nerve.

Another sign pointing in the same direction, and frequently associated with Chvostek's phenomenon, is Trousseau's symptom. Neither of these phenomena is present in cases of myotonia, but the author describes a symptom occurring in this condition which he defines as "the phenomenon of the fist," which consists in a contraction of the hand on pressure being applied to the nerves of the brachial plexus, and which is only seen in infants of from six to eight weeks old. This sign is not dependent upon hyperexcitability like Trousseau's symptom, but upon the imperfect development of the inhibitory centers which preside over the reflexes. True tetany is to be regarded as exclusively a neuromuscular affection developed on a rachitic foundation. According to Kassowits, the largest number of cases of tetany occur during the spring months, completely disappearing as the summer advances, which corresponds to the time of the year during which rickets is most prevalent. Myotonia, on the other hand, has no association with rickets. It usually develops during the course of gastro-intestinal attacks, from autointoxication, and, like them, occurs chiefly during the autumn months. The author summarizes the differences between the two conditions in the following propositions:

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*Rev. mens. d. mal. d. l'Enf.

The contractions of myotonia are persistent, and last for several weeks, whereas in tetany they are intermittent and paroxysmal. In tetany the attacks come on suddenly, while in myotonia the onset is gradual. In myotonia there is no mechanical or galvanic hyperexcitability of the nerve or muscle, and there is no facial irritability. Neither laryngo-spasm, nor the tonic and intermittent spasm of the respiratory muscles, which occur so frequently in tetany, are ever present in cases of myotonia. Myotonia occurs during the early weeks of life and during the autumn months, whereas tetany appears at a much later stage of infancy, and almost invariably in spring. Myotonia is never associated with rickets, while the relationship between tetany and rickets is a very constant one. The contractions have a tendency to recurrence in tetany, while in myotonia the attack disappears with the cause. The treatment by phosphorus, which gives excellent results in tetany, has no effect on the spasms of myotonia. In tetany the fingers are usually included in the spasm, whereas in myotonia the fingers are not involved, the contracture being limited to the hand.

INDEPENDENCE DAY TETANUS.

A year ago we had occasion to refer to the annual trail of disaster following the glorious Fourth of July celebration, and as this National Holiday just passed has left in its trail, like bloody war, death and destruction it is opportune to again call attention to the stupendous holocaust. During the past ten years, more than 35,000 people have been killed and injured from accidents resulting from the Fourth of July celebrations. True patriotism should be encouraged, but Independence Day should not be made a day of licensed lawlessness, a day of rough rowdyism, a day of peril to life, limb and property, a day of noise, nuisance and destruction—features too anarchistic to do credit to our National intelligence or to reflect a genuine spirit of true patriotism.

Generally speaking, the dread of lockjaw is universal, but, being largely based on ignorance, yields no especial salutory effects, not enough to assure for the human the beneficent service the veterinarian is unable to give to horses, of all animals the greatest sufferer from tetanus.

Tetanus or lockjaw is pre-eminently a disease of the conflagration type—kindled by the mearest spark, suddenly bursting forth and apt, when first discovered to be almost formidable. The specific toxin of lockjaw is so virulent that one-millionth of a grain, a quantity so infinitesmally and inconceivably small has been known to kill a gunea pig. This toxin expends itself on the central nervous system. When symptoms first appear, the clinical evidence is conclusive that the system is already profoundly impressed. A study of these dreadful maladies bring up the question as to what extent is the profession responsible and we assert most positively that no physician can hold himself blameless who carelessly neglects the well defined treatment of blank cartridge injuries, or any lacerations on the surface of the skin caused from the explosion of fire crackers, no matter how slight or how trivial they may appear. Is the family physician, called to such accidents free from censure who delays prophylaxis until symptoms of tetanus appear? We assert most positively that he is not.

In the prevention and cure of tetanus the key note is and must ever be despatch. Do it, and do it quick. To this must be added, if the early symptoms appear, the heroic use of antitoxin with utter disregard to the matter of cost. If a successful termination of the case is expected, a thorough knowledge of the constitution of the patient, the power of the remedy and the financial status of the father, and the fearlessness on the part of the physician to go ahead and do his duty and his whole duty in spite of fear or favor are a combination which go a long way toward insuring a successful termination of the case. If there is any disease whose treatment is distinctly prophylactic, it is tetanus or lockjaw. When symptoms appear, ordinary treatment is of but slight avail, therefore, we feel it our duty to impress upon the profession the necessity for radical and rational preventive treatment. When called to an accident resulting from celebrating the Glorious Fourth, the physician's first duty is to inject anti-tetanic serum containing 1,500 units. In the treatment of the disease, experience places the minimum dose of serum at 15,000 units and the maximum at 30,000 units at such injections, which should be given at intervals of six to twelve hours, the number of injections required to effect a cure range as high as twenty-five, though the average perhaps does not exceed eight or ten. The prompt employment of a preventive dose of serum (1,500 units) in all cases should be made obligatory. All gun powder, toy pistol and fire cracker wounds, street, field, stable, wire fence rusty nail and kindred wounds should probably be classed as suspicious and the physician who fails to promptly administer 1,500 units of antitetanic serum is derelict in his duty to his patient, to the family and to the profession.

OUR SEPTEMBER ISSUE WILL CONTAIN THE FOLLOWING PAPERS.

The Statistics of Infantile Paralysis, by G. A. Hodgetts, M. D., Medical Advisor, Commission of Conservation, Ottawa, Canada.

The Physiologic and Legal Status of the Fetus in Utero, by W. H. Sanders, M. D., Health Officer of Alabama, Montgomery Alabama.

The Reduction of Infant Mortality, by Charles Roberson, M. D., Greensboro, North Carolina.

Intubation in Diphtheria, by E. W. Carpenter, M. D., Greenville, South Carolina.

Welfare of the Child from the Eugenic Standpoint, by Milton J. Bliem, M. D., San Antonio, Texas.

Anaphylaxis in Its Relation to Pediatric Practice, by Godfrey Roger Pisek, M. D., Professor Diseases of Children, Medical Department, University of Vermont, and Marshall Carlton Pease, Jr., M. D., Instructor in Diseases of Children, New York City.

OUR OCTOBER ISSUE WILL CONTAIN THE FOLLOWING PAPERS.

The Only Child, by John Ruhrah, M. D., Professor of Diseases of Children, College of Physicians and Surgeons, Baltimore, Maryland.

Cerebro Spinal Meningitis, by Rufus E. Donnell, Gardiner, Maine.

On the Medical Examination of Children Reported as Mentally Defective in the Public Schools, by Isabelle Thompson Smart, M. D., Medical Examiner of Mentally Defective Children, Department of Education, New York City and Mary Sutton Macy, M. D., Lecturer on Physiology and Pathology in Education, School of Pedagogy, New York University.

Atypical Scarlet Fever with Report of Case, by W. H. Anderson, M. D., Wilson, North Carolina.

Tonsillitis, by William F. Waugh, A. M., M. D., Professor of Therapeutics, Bennett Medical College, Chicago, Illionis.

Taka-Diastase in Nocturnal Enuresis, by Dr. Arthur A. Radcliffe, Waukegon, Illinois.

PEDIATRICS

ORIGINAL ARTICLES

THE PORTALS OF ENTRY OF TUBERCULOSIS IN CHILDREN*

BY
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The question of portals of entry through which the tubercle bacillus may infect the body is a large and important one, and especially so in regard to prophylaxis. At the present time it is more unsettled than it was a few years ago. Each theory has its ardent supporters, and just as ardent antagonists, so that one who has only the litterature to refer to is indeed bewildered at the array of arguments for and against.

Tuberculosis is rare in infants under three months. From this time on it increases so that it becomes extremely prevalent between one and two years of age. Albrect[1], who in a period of six years did 3213 autopsies on infants from birth to twelve years, has submitted the following figures: of this number 1060 were tubercular, 18 per cent. being in infants less than one year of age, 65 per cent. from one to six years, and 17 per cent. from six to twelve years.

The theories held as to the portals of entry of the tubercle bacillus are (1) Prenatal infection or the transmission by heredity; (2) Lymphatic infection as through the mucous membrane of the mouth, nose and pharnyx; (3) Transmission through other mucous membranes as conjunctiva or uro-genital mucous membrane, or through the skin; (4) Through the air passages or aerogenic infection; (5) By means of the intestinal tract or enterogenic infection.

Although we know that the tubercle bacillus may enter the body at any point, the controversy is in regard to the chief mode of entrance and especially as to whether it is aerogenic or enterogenic in nature.

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PrenatalInfection. As to the question of hereditary tuberculosis, although there is no doubt that it does exist, it is not easy to estimate its importance in the etiology of the disease. Birch-Hirschfelt[2] was the first to show the passage of tubercle bacilli from the maternal blood into the fetal placenta, and into the fetal liver. He was followed by Bugge who performed an autopsy on a tubercular woman who died four hours after delivery. The infant died 26 hours later. Tubercle bacilli were found in the child's umbilical vein and in a section of an hepatic blood vessel. He then inoculated three guinea pigs with the blood from the umbilical vein and a portion of lung and hepatic tissue. All three died of inoculation tuberculosis.

As to direct heredity of tuberculosis, either the disease may be present in its true form at birth or in the fetus (congenital tuberculosis), or the bacilli may be transmitted from the parents and remain temporarily latent and only show their blighting influence when an opportunity presents, (hereditary tuberculosis.) In either case there is a real transmission of the bacilli in one form or another, and not merely the inheritance of a predisposition.

Concerning congenital tuberculosis, Lehmann has offered evidence by an autopsy on a tubercular mother who died three days after delivery, and on her infant who died 24 hours after birth. The aortic and bronchial lymph nodes of the child were enlarged, hard, yellow and granular. The lungs contained submiliary nodules. The liver, spleen and kidneys showed miliary tubercles. All of these nodules, which were of various ages, contained tubercle bacilli.

What are the possible modes of hereditary transmission? Schlossmann[3] has put forth the following possibilities: (1) Germinal transmission, (2) Placental transmission, (3) Transmission intra-partum.

Germinal Transmission.—The possibilities of the seed carrying the germ of the disease from the father is shown by Friedman who injected into the vagina of guinea pigs after coitus a solution containing tubercle bacilli. A week later on killing the pigs he found the bacilli intra-cellular and lying in the embryonic layer. The organs of the mother were in every case healthy, no tubercle bacilli being found in the vaginal or uterine mucous membrane. Practically it is of no importance whether the spermatozoon is diseased or whether it is healthy and merely carries the tubercle bacilli with it.

Placental Transmission.—Under this are included those cases in which the tubercle bacilli have been found in the blood of the fetus without accompanying changes in the organs, and those in which the tubercular nodules and enlarged lymph nodes have been found at birth. In both these forms of tubercular infection, the mother had suffered from acute miliary tuberculosis.

Transmission Intra-Partum.—Because of the rarity of tuberculosis of the vagina and external genitals, this is of no practical importance. Heredity of tuberculosis by means of the tubercle bacillus is to be distinguished from what is termed the predisposition to tuberculosis. By the latter is understood a condition of the tissues which favors the growth of the bacilli independent of the portal of entry. That certain individuals are more susceptible to tuberculosis than others is a fact that was recognized even at the time when the theory of contagion held sole sway. Since the introduction of the Von Pirquet and Calmette tests we now can show that the infants who were said to be predisposed to tuberculosis are in reality tubercular. If heredity tuberculosis is to be considered a rare phenomenon we must keep in mind the possibility that although the disease may have been engrafted previous to birth, the bacilli lie dormant in the tissues of the child and at a favorable opportunity due to a lowered resistance, or a symbiosis with other disease germs, as for example measles or whooping-cough, a stimulus is given to the development of the bacilli and a consequent outbreak of tuberculosis. Although a number of cases are of hereditary origin, there is no iron law that the offspring of tubercular parents must develop tuberculosis.

Buccal and Naso-Pharyngeal Route.—Regarding infection through the mouth and naso-pharnyx, it is not only possible that the hands of the young infant, which touch everything, may carry bacilli to these areas, but also food, dust, or utensils which have been in contact with tuberculous sputum. In these cases where the mouth and the pharynx are said to be at fault infection possibly occurs by food, although the probability that it may be air borne cannot be excluded. Although according to Grober here is a direct route to the pleura and lungs from the tonsils by way of the cervical lymph nodes, Morst has shown by injection of the lymphatic system in man and small animals that there existed no communication between the superficial or deep cervical lymphatics and the subclavicular and pleural ganglions. The deep cervical lymphatic chain which receives the circulation of the mucous membranes of the mouth, nose, pharnyx and tonsils, ran in all cases to a collecting trunk which emptied into the bulb of the jugular vein. It must not be forgotten however that the tonsils may be secondarily infected by tuberculous sputum coughed up from the lungs. Still[4] believes that although the extension of tuberculosis from the cervical glands to the mediastinum is rare, unhealthy tonsils and adenoid tissue do play a part in the production of glandular tuberculosis in the neck in that by causing an enlargement of the glands, they provide a nidus in which the tubercle bacilli very readily gain a hold. He thinks it more natural to suppose that the mediastinal glands are infected in the usual way through the lungs, rather than by direct extension of the tubercle from the cervical glands, which if it occurs at all, is extremely rare.

He says if there were a direct extension from the cervical glands, the glands at the upper part of the neck would be enlarged and caseous and those at the lower part swollen and slightly caseous, and those of the mediastinum still smaller with only a few scattered foci. Post mortem findings while they show this to be true so far as the glands of the neck are concerned do not show it to be so for the mediastinal glands, for where the affection of the glands at the lower part of the neck is extremely slight with little or no enlargement, and only a few gray points of tubercle, the glands next below in the mediastinum show enlargement and caseation quite as advanced as the topmost of the cervical glands. Again if the mediastinal glands were commonly affected by extension of tubercle from the cervical glands, one would expect the cervical affection to be earlier and more frequent on the right side than on the left. Statistics of operations on the tuberculous cervical glands by Dr. Rowland showed in 100 cases in which one side was chiefly affected 51 times on the right, and 49 on the left; in other words the two sides of the neck were almost equally affected.

Infection Through the Skin.—The frequency with which the tubercle bacillus finds entrance to the human body by this means is extremely difficult to determine. While it is admitted by many that the tubercle bacillus may pass through the skin without leaving any traces, and in like manner pass the regional lymph nodes to produce lesions of the more remotely situated organs, clinically it is not infrequent that we see localized lesions of the skin and occasionally instances in which the evidence is strongly suggestive of generalized infection from the local lesion. The other avenues; the conjunctiva, ears and uro-genital tract are less frequent but well established.

Aerogenic Infection.—Until lately the opinion that the bacilli attack the child through the respiratory tract was not only the accepted but almost the uncontroverted view. In pediatric literature the cause of tuberculosis is always given as due to the inhalation of the bacillus. As a proof of this belief it was stated that in children the lungs and the bronchial glands are the sites of the most frequent invasion. Koch himself said not many years ago, "In by far the majority of cases of tuberculosis the disease has its seat in the lungs and also began there; from this fact it is justly concluded that the germ of the disease must have gotten into the lungs by inhalation."

The supporters of the aerogenic theory point to the fact that the greater changes following an infection of certain bacteria, as well as the tubercle bacilli themselves are found in the glands of that region in which the infection takes place. Men who have been studying the frequency of tuberculous changes in the definite groups of lymph nodes find that the bronchial nodes in the majority of cases are the ones chiefly affected, showing tuberculous changes of pronounced caseation.

Weleminsky maintains that the bronchial lymph nodes drain the lymph steam of the neck as well as those coming from the intestines, and that the caseation of the bronchial lymph nodes is explained by means of the combined streams of bacilli which have passed the mucous membrane of the mouth, throat and intestine. But Morst in his researches claims to have proved moreover that between the lymphatics of the intestine and those of the pulmonary apparatus there exist no anastomotic trunks.

Cobbett has furnished us an example as a support to the inhalation theory. He first ligated and divided the esophagus of various animals then caused them to inhale an atmosphere laden with B. Prodigiosus which were later found in the lung in pure culture. He then performed the experiment with tubercle bacilli with like results, proving the animals to be tubercular by the inoculation of their organs and glands into other animals.

Still another argument and one little known is that tubercle bacilli when on the mucous membrane of the bronchus are a greater danger to the organism than when on the mucous membrane of the intestine. While on the one hand it is the normal task and function of the mucous membrane of the intestine to digest and destroy bacteria, on the other the presence of only a few bacteria is a powerful aphysiological stimulus to the bronchial mucous membrane which is normally accustomed to air well purified by the ciliated epithelium of the upper air passages. Findel caused to be inhaled by a dog 5,000,000 tubercle bacilli with the result of an extensive pulmonary tuberculosis, but he found that 1220 times that dose produced no effect when given by the stomach. In using guinea pigs he found that only 20 bacilli were sufficient to cause pulmonary disease when inhaled, and 382,000 times that number when given by the stomach.

It has been asked that if tuberculosis is due to inhalation, in what form is the infective material conveyed to the lungs? Here again opinions differ. Flugge[6] believes the infection due to the inhalation of air containing minute droplets of fluid in which the tubercle bacilli are suspended and which are projected into the atmosphere by the consumptive when he coughs, sneezes, or speaks in a loud voice. That these droplets are drawn into the finest bronchi he has shown by inoculation experiments with material obtained from such bronchioles. Villemin and others differ from this view and believe that it is the dried material that is the most important factor in the dissemination of tuberculosis. This opinion I think confirms the views of Koch. Walsh of Philadelphia also points out that this view is not in accordance with clinical experience, in that cases of infection among nurses in tuberculosis sanatoria are almost unknown. He further adds that it would indeed make living with tubercular patients dangerous, not so much from particles of dried sputum attached to the dirty patient, as from the droplets coughed up by the patient.

Enterogenic Infection.—The possibility of the intestine being the chief portal of entry of the tubercle bacilli was mooted as long ago as 1868 by Chauveau and confirmed by Villemin, Klebs and others. In 1903 Von Behring reopened the question, and since then a great deal of work has been done on the subject.

The weakness of the intestine during the nursing period of the infant offers a possible cause for the appearance of tuberculosis. Experiments by Disse have shown that the intestinal wall of the infant is more pervious to tubercle bacilli than that of the adult, and that in the newly born individuals of different species, the mucous layer which lies on the epithelial layer of the mucous membrane, which is unbroken in the adult, is sieve like, thus making it possible for the tubercle bacilli to pass through. In refutation of this these findings have not been proved by others, nor has anyone proved that the mucous layer is the chief protective element of the epithelium.

According to Von Behring tuberculosis in the majority of cases, is dependent on the fact that the tubercle bacilli at some time in earlier life have passed through the delicate wall of the intestine where they either produced a lesion at once, or lying dormant, have waited a chance to reappear in later years. As he aptly says, "Tuberculosis of the adult is often the result of a song begun in the cradle of the infant." He believed that the danger lay in the milk which contained tubercle bacilli, irrespective as to whether the bacilli were of bovine or human origin. Later he emphasized this point and enlarged upon it adding that the bacilli which are transmitted from mouth to mouth in the act of kissing, or inhaled with the dust of infected rooms, are all swept into the intestinal tract by the milk. According to this view the natural assumption was that following an enterogenic infection we should look for the primary focus in the intestinal tract and its regional lymph nodes. But in contradistinction to this theory many investigators report that primary intestinal or mesentery lymph node tuberculosis is very rare, notwithstanding the fact that Heller found primary tuberculosis in this region in 30.7 per cent. of his cases of 140 autopsies. Hanburger[7] also believes that Von Behring's theory is by no means proved. Instead he believes the bacilli do determine a lesion at their point of entrance and a secondary adenopathy.

Escherich[8] contrary to Von Behring believes that pulmonary tuberculosis of the infant is due to the inhalation and not ingestion of bacilli-bearing dust. He bases his opinion partly on observations of autopsies on 32 infants between two and six months, which showed a pulmonary lesion represented by caseous nodes occupying most often the right lung, indifferently the apex or inferior lobe. The broncho-pulmonic and corresponding tracheo-bronchitic lymph nodes were casefied; at times the nodes occupying only one side. They were in relation to the seat of the pulmonic lesion. Sometimes those of the opposite side were affected at the same time, principally those which were found at the bifurcation of the trachea or the anterior nodes of the mediastinum. In these 22 cases he noted that 17 of them lived in intimate relationship with parents or relatives who had advanced tuberculosis. Martha Wolstein[9] in 185 autopsies on tuberculer infants less than three years of age found that the tuberculosis was localized to the respiratory tract 13 times and to the intestine once, and that in four cases the tuberculosis was manifestly of intestinal origin. In the cases of generalized tuberculosis it was impossible to establish the portal of entry.

On the other hand Mendlesohn[10] found in 1255 autopsies on infants 292 cases of tuberculosis. In 70 of these death was due to an intercurrent malady, and in 222 to tuberculosis itself. In 29 cases the infection was localized in the respiratory apparatus and in 94 cases generalized but had made its first appearance in the respiratory apparatus. In 18 subjects it remained localized to the digestive apparatus, and in seven it had made its first appearance in the intestine and then become generalized. In 128 times the lesions were mixed, that is to say they were quite prevalent in the lungs and intestine, but in 21 of these cases they seemed to have made their appearance in the respiratory apparatus, while in the intestine only once.

Ganghofer, Hamburger, Comby and others have all noticed that tubercular lesions of the mesenteric lymph nodes appeared less frequent than those of the mediastinum, and that when those lesions did exist they were always more recent than the mediastinal lesions.

Whitla and Symmers did some very interesting experiments bearing on the question of the alimentary tract being a possible source of tubercular infection. They fed some guinea pigs with China ink mixed with olive oil and water, by means of an esophageal tube. Within 24 hours or in as short a time as four hours, where the animals had had no food the previous day, they found the lungs charged with carbon particles. This was also found to be true when the carbon particles were injected into the peritoneal cavity. From this they contended that the carbon particles gained an entrance through the intestinal epithelium, and reaching the lymphatics passed through the mesenteric lymph nodes into the thoracic duct and on into the venous circulation of the lungs. Now Vansteenberghe and Grysez found that this did not work out the same in young and adult animals. In young guinea pigs the particles after reaching the mesenteric glands were arrested, so that the lungs remained free, whereas in adult animals they reached the mesenteric glands as described. They continued their experiments as to the proof of intestinal infection. They left the digestive tract patent and through a low tracheotomy completely plugged one of the bronchi with cotton wool, thereby cutting off one lung entirely. Then they confined the animals for a prolonged period in a carbon loaded atmosphere. On autopsy of the animals they found that the patent lung showed deposits of carbon particles in the bronchi and alveoli and to a certain extent in the parenchyma. The lung which had been cut off showed an infiltration of the parenchyma with carbon but none in the bronchi or alveoli.

Whipham[11] has called attention to the fact that young and adult animals show the same difference in their reactions to infection by the tubercle bacillus as in the case of the carbon particles. This has been ascribed to the histological differences in the mesenteric glands at different ages. In the adult the alveoli of the glands are loose in structure and consequently the bacilli may be supposed to pass through into the chyle and be taken up by the polymorphynuclear leucocytes which convey them to the fine capillaries of the lungs and the bronchial glands. In young animals the bacilli are arrested in the denser abdominal glands which first become infected and, as Jones has pointed out, the lymphatic vessels probably close down with increasing age, and in the abdomen the lymph circulation becomes more centered on the thoracic ducts. In this way the differences in tubercular infection in early and late life are accounted for, and the basal infection of the lungs, which is common in childhood, can be attributed to the passage of the bacilli along the lymphatics of the diaphragm. In the adult on the other hand, the thoracic duct is the more important channel, and by this means the apices of the lungs become infected. He has also suggested the possibility from an anatomic point of view of tuberculosis of the spine and even tuberculous lesion of the lungs starting from tuberculous foci in the thoracic ducts which have originated by absorption from the intestine. We can clearly see the possibility of this if we remember that the thoracic duct runs up from the second lumbar vertabra to the fourth dorsal and then passes upwards and forwards so that at the second cervical vertabra it arches over the pleura and joins the subclavian vein, while the right thoracic duct occupies a similar position in regard to the right lung. The site of election of tubercular disease in the lungs is one or two inches below the extreme apices, and in the vertabrae from the sixth dorsal to the second lumbar.

As regards the theory of intestinal infection three possibilities have been suggested: (1) that there developes a primary tuberculosis of the intestine which gives rise to involvement of the mesenteric lymph nodes; (2) that the intestine becomes the seat of a non-tubercular infection and this allows a passage of tuberculous material and other micro-organisms through its wall; (3) that healthy intestine allows the passage of tubercle bacilli more especially during childhood.

If the infection follows the second or third methods, the primary focus is in the mesenteric lymph node. This focus may be very small not even microscopical, but nevertheless forms the starting point of a severe general tuberculosis.

There is one more possibility, one which has received too little attention, namely, that the bacilli can pass not only the intestine, but also the mesenteric lymph nodes without causing any lesions. We must remember that during digestion a strong current flows from the lumen of the bowel, and then traversing the intestinal wall, enters and passes through the mesenteric lymph nodes. It does not seem unlikely that the bacilli attaching themselves to the fat globules may pursue this same course through the distended lymph spaces and obtain an entry into the thoracic duct, thence into the venous circulation and right auricle. From here they are transported to the capillaries of the lungs where the blood stream is slow and then enter the lymphatics. They next find their way to the bronchial lymph nodes which become the primary seat of the disease. When these lymph nodes cannot receive any more foreign material, dissemination takes place in the lungs. Animal experimentation shows that the injection of tubercle bacilli into the jugular vein leads to a tuberculosis of the bronchial lymph nodes and lungs; also that after giving tuberculous food the capillaries of the lungs are full of bacilli.

Lately Pehu[12] has made some important observation bearing on this question of enterogenic infection. In his autopsies on infants he noticed that the lesions caused by the tubercle bacillus were very closely grouped around the blood vessels where they penetrated the intestinal wall. These extremely small granulations lay either longitudinally along the vessels or at the bifurcation of the secondary branches. He believes that the bacilli carried by the blood stream colonize first and build up the new formation within the peritoneal tunic. Then when the granulations have run together and a tubercle is formed, there is a progressive penetration into the intestinal wall and an ulceration is formed when it reaches the mucous surface, unless we should wish to incriminate the ischemia produced by the obliterating arteritis, a sattelite of tubercular formation.

On examining the intestinal surface of the intestine this perivascular disposition is not evident, also it is noticed that the ulcerations do not infalibly lie in Peyer's patches, but are irregularly distributed in the intestinal wall.

In many cases of primary intestinal tuberculosis reported by writers it was found that the parents or nurses had caries of the jaw, and were in the habit of putting to their lips the drink or food before giving it to the children. So it is not to be wondered at with these massive and repeated inoculations of tubercle bacilli that the children showed an ingestion tuberculosis which was rapidly fatal.

Two points must be especially considered in regard to infection by way of the intestine; first, the digestive system does not commence at the stomach but at the lips, so that at any point of the intestinal tract, from mouth to anus, infection may take place, and secondly, there are certain points which are favorable portals of entry for the bacilli. In young children the mucous membrame of the mouth is a locus minoris resistentiae as are also the pharyngeal and faucial tonsils, which through their crypts afford an excellent resting place for the bacilli; whereas the stomach and small intestine appear rarely to be the seats of attack of the tubercle bacillus, the large intestine is frequently involved.

In conclusion we may say that according to our present knowledge, any point of the human body may at some time serve as the portal of entry for the tubercle bacillus, and that in the vast majority of cases infection takes place through either the respiratory or alimentary tracts. As to the chief mode of infection there is such a wide difference of opinion our knowledge is by no means precise.

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MEDICAL INSPECTION OF OUR PUBLIC SCHOOLS.

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Introduction.—The public school of our country is the cradle of liberty, the crucible into which the children of the poor and the rich of the tenements and the boulevard of different nationalities and races are sent to be formed and to be molded into citizens of one of the greatest countries in the civilized world—America. One-fifth of the entire population of the United States, or about seventeen million two hundred thousand children and youths are enrolled in the public schools. Four hundred and ninety-six thousand teachers are employed and are maintained at an expense of three hundred and eighty millions, equivalent to thirty-one dollars for every pupil in average attendance. The value of school property was estimated in 1909 at $945,400,000. It requires a taxation of thirty cents on every one hundred dollars of taxable property. Seven-tenths of this taxation are local taxes. No other country provides at public expense for the instruction for such a large proportion of the population. These enormous funds must be managed to yield the greatest possible return to every child. We must see that every child gets a fair start in life and an equal opportunity to develop the best it has in it, for the benefit of the child, the state and the nation. A series of investigations has proven that children who do not attend school are free from contagious, infectious diseases and defects. Mr. Leonard P. Ayres of the Russell Sage Foundation, from a study of forty thousand cases found that twenty-five per cent of the children fail to attend school seventy-five per cent. of the time. Sixteen per cent. of the children drop out altogether. Nine per cent. are slow and the causes for all these are due to ill health and defects of the children. Other trustworthy studies have convincingly demonstrated that only one-half of the children who enter the elementary schools graduate therefrom. The Royal Commissioner of England after careful study and observation decided that medical inspection of the schools is the chief factor in preventing the deterioration of manhood and womanhood and holds that the state must do it.

Medical Inspection.—Medical inspection and supervision of the schools was known to the ancients and was practiced at an early date. Since the twelfth century physicians have served as medical inspectors of school from time to time. In New York medical inspection was agitated in 1872. But not until recent years was medical inspection treated as a matter of first importance, and it became a movement national in scope of England, France, Germany, Switzerland, Japan, the Argentine Republic, Sweden and Bulgaria. In the United States it exists in twenty-four states and the District of Columbia. Their total population is twenty-two millions, and are enrolled in their schools four million children.

From an economic and humanitarian point of view there can be no more valuable service rendered to humanity than in the preservation of the health of the children, and you cannot do this unless you have efficient medical inspection of the public schools.

The industrial evolution of the eighteenth century hurled down the ancient supremacy of the manual crafts, reducing the sturdy workers to dependence upon the whirling machinery of the workshop. And it has taken away the farmer from the soil to the centers of industry; the results of these changed conditions on the health of the children have become so marked as to insistently demand attention by those who have the child's welfare at heart. The great strife and competition among the mechanics and laboring classes themselves, the relationship between labor and capital, the problem of the great armies unemployed throughout the country, fluctuating with the times and the financial condition of the country and the world at large, have at times become so acute as to bring us face to face with local, state or even national crises.

To benefit the existing conditions numerous organizations have been organized among capital and labor, some national in scope and others political in nature, while most of them are sincere in their intentions to remedy the present evil, yet not one of them, not even organized labor, ever thought of the importance of the great help which medical inspection would be to the child, to be of more usefulness to himself, to society and to the state and nation. As I have stated before that only one-half of the children who enter the elementary schools graduate therefrom and that twenty-five per cent. are absent from school seventy-five per cent. of the time, due to ill health and physical defects.

John J. Mahony, Principal of Packard School, Lawrence, Mass., gives the following figures:

"Out of seventeen hundred and thirty-one pupils enrolled in the first grade, in the same class in the eighth grade has six hundred and thirty-nine and graduating only six hundred and six. Where have the pupils gone and why have they left school? No doubt physical defects and ill health are responsible for a great many of them, if not for all of them."

The state provides for the education of all citizens as a measure of self-protection, and the state must also take cognizance of their physical welfare for the same reason. This means that existing educational boards must employ medical inspectors the same as they do elementary teachers. At the present time it is optional with the board of education to employ medical inspectors or not, except in one state and that is Massachusetts where the law is mandatory. No one questions the justification of the state in assuming the function of education and in making that education compulsory is to insure its own preservation and efficiency and no sane and intelligent citizen can question the right of the state to supervise the health and physical defects of its little children. In fact, medical inspection should be an important branch of our educational system.

The School Nurse.—Medical supervision without a nurse is almost impossible. She is just as important an adjunct to the school inspector and the defective children as she is in the operating room and to the patient. There are ample proofs that it was the practical work of the nurse that drew public interest and sympathy to the medical work in the public schools and vitilized the hitherto perfunctory routine of medical inspection. England was one of the first countries to employ nurses to look after the school children in 1858, and not until 1891 was the first medical inspector appointed. Here the reverse took place. The first medical inspector was appointed in New York City in 1892, Dr. Moreau Morse, and not until 1902 were the school nurses appointed in the same city. Dr. Ernst J. Lederle, formerly commissioner of health of New York City, says: "The school nurse has been voted a success from the day she began work." Dr. Thomas F. Harrington, Director of the Department of School Hygiene of Boston, writes: "It does not seem possible to conceive a more satisfactory arrangement of a more effective piece of school machinery than the school nurse under school supervision."

Citations from the best authorities on the subject similar in tone to those quoted might be indefinitely multiplied. It may be said indeed that there is no division of opinion on the subject. My own experience has proven that very few of the parents will pay attention to the medical inspector's advice, and through the nurses' home visits and following up the cases, a good many will be corrected, and such is the experience of Dr. S. W. Newmyer of Philadelphia and others, who have done medical inspection with and without a nurse, carefully observed the results.

School Instruction in Sex Hygiene.—The importance of sexuality in life, the divine admiration of the sex was recognized and practiced by every tribe and nation of pre-historic antiquity. With the advance of Christianity, however, until recently, sexuality was not looked upon with favor and a sane knowledge of the subject was assiduously withheld from the people. The result is that there is scarcely a subject so completely ignored as the sex function, although so much of the health and happiness of the race depends upon it.

This is one of the chief causes of the present existing conditions throughout the civilized world, in regard to the so-called social evil.

Ruggels found in New York City in the better class families one-third of the sons of adult age infected with syphilis. Furnier has found in a study of one hundred syphilitic women that one out of five has been innocently infected by her lawful husband. Such a woman does not only suffer in her own body, but exposes her children to the most serious forms of mixed hereditary syphilis.

Lemoir, after a study of nine years, reported at the International Congress in Brussels that between thirteen to fifteen per cent. of the male adults of Paris were syphilitic. In other words, that in that city alone and considering only the male sex, there were one hundred and twenty-five thousand cases of this disease.

Ninety per cent. of our young men stray from the paths of virtue before marriage; sixty per cent. contract venereal diseases, which are difficult to cure. More wives than prostitutes have veneral diseases innocently contracted from their husbands. Thousands of unborn babes are killed by parental infection. Sixty per cent. of the blindness is due to venereal diseases. One-eighth of all the cases in the hospitals in New York are venereal diseases. Over two hundred and fifty thousand venereal cases are to be found in New York.

Any one who follows the modern method of obtaining exact medical history of his patients will get results similar to the above. One remarkable epidemic was reported by Skutch in Posen, Germany, where two hundred and thirty-six little girls from six to fourteen years of age were infected with vulvo vaginitis of gonorrheal origin, due to the use of the public bath.

Paradoxical as it may seem, in spite of the great strides which have been made in preventive medicine in the last two decades of the discovery of the gonococci by Albert Neiser in 1879, the spirochete by Schanden and Hoffman in 1905, of the Wasserman reaction of Erlichs, 606, and in spite of physical destruction and the awful consequences which venereal diseases cause to the victim, to his family, if he has any, and to the public in general. In fact, it is undermining the very foundation of society. Venereal diseases are on the increase to the shame of our modern civilization and the existing code of morals among all classes of society. What is the remedy? Nay, what is the prophylactic measure for this dreadful condition? School instruction in sex hygiene, if done properly and systematically, is the only remedy, and is the only prophylaxis. We must teach the children and train them as carefully in matters pertaining to sex as in deportment and any other branch of our elementary and academical studies. These sentiments are shared by all thinking men and women of the age. Dr. Charles Eliot, President Emeritus of Harvard College, before the Congress of the American School Hygiene Association, advocated the teaching of sex hygiene to all children before the age of compulsory education. He says: "The child before leaving school should be well informed in sex hygiene and the serious consequence and the contagiousness of syphilis and gonorrhea and the importance of bodily purity."

Mr. William D. Parkinson says in a very interesting article in the Educational Review: "And it is about time that personal hygiene and sexual physiology should be imparted to all children. Systematic instructions as to the best safeguards against the dangers should be given. Some way must be found to make the spiritual interpretation available to those who have never seen the vision, or like Nebuchadnezer, have forgotten it."

The teacher is an interpreter of life, said Carroll D. Wright. How can our teachers adequately interpret life, if they ignore those partings of its way which are the most real and immediate concerns of life for the maturing youth?

In fact, it seems rational indeed that no other subject or knowledge is of so much importance to the individual, to the state, to the nation and to posterity as the physiological functions and the main purpose and the significance of the sex relationship, and no other function or natural law brings so much misery, unhappiness, physical and mental destruction, often for life and in the next two and three generations, as the violations of this fundamental law of life, and a disordered relationship between the sexes. Should not the nature and mutual obligations of the family be as proper a subject of public instruction as the nature and obligation of the state? Who else could impart and instruct effectively these important lessons of sex hygiene and picture the penalties of vice and transgression but the medical inspector and the school nurse?

It is not the purpose of this paper to map out a plan of how this subject should be taught, nor do I claim that the medical inspector should be the sole instructor of this important subject, but I think he should be one of the agents to combat this evil and that the medical inspector should be one of the instructors, or have the supervising of the instruction of the hygiene of the sex in the public school. The medical inspector should instruct the boys and the nurse the girls.

Teeth of the Children.—Perhaps no other defect of the school child is so injurious to its health and the cause of its backwardness, and no other defect can so easily be cured and corrected, as is dental caries, and yet very little attention has been given to this defect by parents, family physician and dentists. Children of the middle classes of intelligent parents with diseased mouths, caries of two, four and more teeth full of bacteria are seen by me daily, and after sending notices to the parents calling their attention to the same, no attention is paid by them. The family physician fails to impress the parents of the importance of good and sound teeth and the dentist acts indifferently.

In Berlin ninety per cent. of the children have diseased teeth. Riten in examining one hundred thousand in all parts of Germany found that eighty-one to ninety per cent. have diseased teeth. In New York ninety-seven per cent. have dental caries. The same is true in England and such is my own experience in examining about five thousand children. The London County Council of Educational Committee has recommended the establishment of dental clinics in convenient centers. The Common Council of Strassburg has established a city school teeth clinic, claiming that the public health is menaced by the lack of care taken for the preservation of children's teeth.

The mouth presents all the features necessary for the propagation of the micro-organisms soil, proper temperature and moisture; tooth cavities, diseased root canals, loose and spongy gums, ill-fitting crowns and bridges serve only too well as culture media for the germs. A goodly majority of diseases are contracted through the diseased teeth; dental caries strikes at the very foundation of health by impairing and impeding digestion. To preserve the teeth of our children is to preserve their health, to save them from pain, dyspepsia and other diseases and to prolong their lives. Caries of the teeth is absolutely preventable and fairly curable. Dental caries in the child is more injurious to the child than to the adult, for obvious reasons, because the child's body is in a much higher degree susceptible to the reaction of external influence than is the case with adults. Adults are not only better able to chew with an imperfect masticating apparatus, but also their digestive organs are better able to cope with imperfectly chewed food than are those of children. Professor W. D. Miller of the University of Berlin, in his work on Micro-organisms, says: "If the oral cavity has shown that well nigh innumerable different kinds of bacteria, pathogenic and otherwise, are to be found even in a fairly well-cared-for mouth and the number of these in a mouth that is not constantly cared for is subject to dental caries is simply enormous, and the diseases caused by dental caries are meningitis, pyemia, tuberculosis, gastritis and enteritis."

It is a positive fact that if the milk teeth are allowed to decay that it has a decidedly injurious influence on the development of the permanent teeth, and meanwhile it causes indigestion and poor health and diseases as well.

It is only within recent years that dental caries of the children have been made a study, and I have no doubt that the reports of medical inspectors throughout the land will awaken public interest and that the teeth of the children will be preserved and saved.

I shall refrain from reporting the methods and results of our work here as the board of education will in the near future publish in detail, in pamphlet form the results and methods of the medical inspection of the schools here in Cleveland from the beginning until the closing of the school year, and it will be available to all those who are interested in this important problem from a humanitarian pedagogical or medical point of view.

The ultimate effect of medical inspection will be far reaching, the children will look upon the physician not merely as a bonesetter, prescriber or dispenser of pills and nauseating liquids, but as the guardian of their health, an instructor of hygiene, right living, which makes for better manhood and womanhood, a higher conception of a cleaner, purer and healthier citizenship than the world has ever known.

Discussion.

Dr. Rector, Columbus: I have enjoyed the paper, but am sorry that the essayist did not tell us more of protection and prevention. It is no use to tell full-blooded young people that they should not run these risks.

It is generally agreed that efficient preventive measure against venereal diseases would be a great blessing. The would-be moralists stand in the way, with their claims that a knowledge which had developed, by the use of calcium lactate, 30 grains every four hours, and the hypodermic use of 1000 cc. of normal salt solution with the more or less continuous use of salt solution in the rectum, the tube being in service about half of the time. At the end of 48 hours it was very apparent that the child was not improving. She was still very pale, becoming slightly icteric, and the pulse was very rapid and weak. The nasal bleeding had not stopped, and the face had become edematous. It was then decided to use human blood serum, as suggested by Welch in the American Journal of Medical Sciences in June, 1910. In these eight cases of hemorrhages in the new born he saved seven by this therapeutic agent. Serum was obtained under aseptic precautions from one of the house physicians and one of the nurses, and this was used to combat the distressing condition of the patient over a period of four days. On August 19th, at 5 P. M. 16 cc. were given hypodermically and again at 11 P. M. During the next day two doses of 30 cc. were given , one in the morning and one in the evening, and the same was repeated on the following day, the last dose of 30 cc. being given only in the morning of the fourth day of treatment. In all 250 cc. were given in eight doses.

By the morning of August 21st, it was noticed that the patient seemed better in a great many ways, although the nose was still bleeding slightly and there had appeared a hemorrhage from the left ear 20 hours after the first injection of human blood serum. However, by the following morning, the temperature had gone down considerably; the patient ate and drank more eagerly; all bleeding had practically stopped, and convalescence seemed established.

From this time on until the patient's discharge from the hospital she made a more or less satisfactory convalescence complicated only by a rather severe pus infection in the scalp which caused a low grade of fever for some time, but finally on her discharge she seemed well in every way. A few days ago she presented the picture of health and has had no recurrence of the purpura.

At one time it was contemplated to make a very exhaustive study of the blood in this case, with reference to blood coagulation, retraction of clot, number of platlets, and blood bacteriology. However, this was abandoned for several reasons, and our energies were directed along therapeutic lines, feeling that whether we were dealing with a symptomatic only, or a real idiopathic purpura, the serum would still possibly be of some use. The patient's blood serum gave a negative Widal on two examinations. The red blood count of 2,264,000 on the next day after admission had sunk three days later to 1,590,000 with a hemoglobin of 28 per cent. and by September 1st, ten days later, it had come up to 3,960,000 red blood cells, and 70 per cent. hemoglobin. The white blood cell count was 10,400 on the second day after admission, and three days later it was 8,800. The differential count made on August 18th, 23rd and 26th, showed nothing out of the ordinary, there being on these three dates respectively 34, 11 and 31 per cent. amount of mononuclears, and 64, 76 and 88 per cent. of polymorphonuclears. On August 18th, several myelocytes were noted and the red blood cells were very markedly degenerated. On August 23rd, several megaloblasts and normoblasts were seen and this regenerating action on the part of the bone marrow together with the leucocyte count of 8,800 made us feel that the prognosis was even at that time favorable.

Comments.—It may be that this was a symptomatic purpura from some infection and the high fever together with the enlarged spleen, etc., lends some color to this idea, but the absence of a blood culture, platlet, counting, coagulation, time. etc., makes us hesitate to absolutely declare this to be a case of purpura hemorrhagica, but clinically it certainly seemed to be. The peculiar family history with reference to the death of the children suggests very easily a possible luetic condition which many have claimed underlies many of these hemorrhagic cases. A more careful inquiry into these facts coupled with a Wasserman, contemplated in the near future will probably throw some light on this point.

1023 N. Grand Avenue.

ARE WE SATISFIED WITH OUR PRESENT KNOWLEDGE AS TO THE CAUSE AND TREATMENT OF "SUMMER COMPLAINTS?"

BY

SAMUEL A. VISANSKA, Ph. G., M. D.
Atlanta, Ga.

The term "summer complaints" covers a wide range of diseases that appear each year with the advent of warm weather, so I apologize in advance for using such a broad term, believing, however, that your readers will understand just what I mean.

It has occurred to me that the time has come when we, as physicians and educators, should get together and do all in our power to try and reduce the enormous death rate from these diseases which occur each summer. I must admit that the number of deaths here and elsewhere is entirely too large, and there must be a reason (or reasons) which has not been brought to light. We are trying to enlighten the public by lectures, news articles, district nurses, etc., etc., on tuberculosis and a few other diseases, but we seem just a little timid to tackle the cause and treatment of "summer complaints."

If children are only "born to die," then we should take steps to prevent their coming into the world. On the other hand, if allowed to enter into this world, they are then, even though as infants, entitled to every care and consideration. Are they getting it? What has been done in the past fifteen years to reduce infant mortality during the heated term? Take text-book after text-book, note the etiology, and then glance over the treatment, you find their ideas practically the same, only expressed differently. They lack just the information necessary. Looking over the aetiology you find the same old cry: temperature above 60 degrees, Fahrenheit, unhygienic surroundings, bacteria, age, impure milk, improper diet, and last, but not least, teething. The fight for pure milk is going on in every part of the country, and should be kept up until it is in the reach of every one. But, even so, the death rate remains alarmingly high.

Now, the man, woman or child who first taught the teething theory is responsible for more deaths than any other one person. This theory has been so instilled into the minds of the laity (and quite a number of physicians,) that we are seldom called to treat a case of intestinal disorder until the mother, grandmother and neighbors have exhausted every bit of their knowledge, and when they see fit to honor us with a call, the little patient is often beyond the stage where it will respond to the most skillful treatment. The history of the majority of cases is as follows: "The baby is teething, and the bowels are running off, has been sick several days; gave a dose of oil, then Castoria, a few teething powders; then a friend of mine across the street came over and said her baby had the same trouble a few weeks ago, and she had some medicine that cured it in one day, so I gave it a few doses of that, but it does not seem much better. What frightened me was, that the baby began straining, and passed some blood, so thought best to call you in; is having fifteen to twenty stools a day; she is cutting her 'stomach and eye teeth.' Have been feeding her on milk, rice, bread, etc., Age one year.'' Now, this is not exaggerated, but one that we get from intelligent mothers, and right here is where this theory is most harmful.

If teething has anything (or everything) to do with the cause of bowel trouble, the physician should keep it to himself, in order that as soon as there is the slightest intestinal disturbance, from whatsoever cause, impure milk, improper diet, etc., the cause can be immediately relieved and the infant quickly restored to health. It is well to inform the public as to pure milk, proper diet, etc., but just as long as the teething theory remains in their heads; just so long will our death rate remain high.

I do not care at this time to discuss just what part teething plays in these diseases, but I would like very much to see the day when this is seltted. One physician should not say that teething causes bowel troubles when another physician equally as successful a practitioner, takes the opposite view. There should be only one side to this. Is there not a way to settle this highly important question?

Let those of you who teach and have the advantages of original research work, take this up, for humanity's sake. I earnestly suggest that a special congress of physicians meet at some suitable place, invite men from the rural districts, as well as those from cities, and let us take up this subject from every standpoint and see if we cannot settle for all time the exact causation, the very best methods of treatment, and then begin a campaign of education among the laity.

318-19-20 Grant Building.

THE TREATMENT OF "SUMMER COMPLAINT."

BY

IRVING DAVID STEINHARDT, M. D.

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Many of you just as soon as you saw this heading decided not to read any further as there could be nothing in such a common place subject to interest you. Why, years ago, you learnt all there was to know about this very wide-spread disease in medical school and have treated it more or less successfully every since and I will say right here that in this little article on the disease, there is nothing startling new, and yet what is here stated may serve as a reminder of the things you did learn in medical school and have since forgotten; it may also serve to decrease the infant mortality in your practice. Take the few minutes time that is necessary to read this little "brief" on the subject, and see if, when you are through with it, you are sorry you spent the time. Personally, I think that you will be glad, for as all of us in the profession, and out of the profession also, know it is gastro-intestinal complaint that are responsible for the large summer mortality among infants and young children. It is this fact that I offer as an excuse for the publication of this article. The treatment suggested here is by no means original and such is not claimed for it, but it is an efficient treatment as I can vouch for, as I have used it both in my private practice and in the several years I was connected with the children's department of the Vanderbilt Clinic, of the College of Physicians and Surgeons. The title "summer complaint" is used purposely because, to the average practitioner, all summer diarrheas in children are "summer complaint," and even in the seats of the "High and Mighty" there is much dispute as to just what exact train of symptoms should receive the official designation of summer complaint which, by the way, is the lay name after all. With our present knowledge that most diarrheas are caused by the efforts of Nature to throw off from the gastro-intestinal tract something that at that time is acting as a gastro-intestinal irritant, we should not attempt to arrest the process with drugs, at least not until after we know that the tract is thoroughly clean, and may take for granted that continued efforts at defecation is due to the inflamed condition of the mucous membrane. Most practitioners seem to realize this in all cases except in that of infantile gastro-intestinal disturbances and it is in these very cases that this knowledge put into practice is of prime importance to your little patients. No matter what else you do to these little patients don't "dope" them with infantile chalk mixtures thereby locking up in the gastro-intestinal tract the poisonous material that is at the root of the trouble and which Nature is doing her best to rid the system of. Remember you are dealing with an acute infection and handle your case accordingly. In the very great majority of cases it is positively harmful to use these mixtures or others of a like nature and in most cases it is absolutely unnecessary, therefore poor therapeutics. The old adage that "an ounce of prevention is worth a pound of cure" was never so true in medicine as it is today, therefore a little heart to heart talk with your patients having young children to tell them how to avoid summer diarrheal troubles in their children is practicing medicine of the most up-to-date sort. Also advise them that with the very beginning of a diarrhea the first thing to do is to stop all food and drink at once and very promptly administer a good sized dose of castor oil, or several small doses of calomel. Then look to their doctor for further instructions And doctor don't forget this yourself. Many times the castor oil or calomel is ordered promptly by the doctor who forgets however to order the entire stoppage of the food, which is like trying to stop a flood of water from a faucet by putting a basin beneath it to catch the water but neglecting to close off the water tap at the same time. Most summer diarrheas will yield to the following simple treatment: Just note the almost entire absence of the use of any great amount of drugs. First, stop absolutely all food and drink for a period of at least two hours. Second, immediately administer castor oil or calomel, the amount of either depending on the age of your patient, in the manner noted above. Third, direct that sometime after two hours have elapsed the little patient may have cool, not cold, boiled water as desired and at its regular feeding times barley water may be given in such quantity and at such intervals based on the age and weight of your patient. (and it is a good idea to instruct whoever is in charge of your patient how you want this barley water made.) If after following this treatment for from twenty-four to thirty-six hours the diarrhea has improved very much both as to the number of stools and what is in them, as it usually does, one starts with the utmost caution to very slowly bring the patient back to a normal diet again making haste slowly and correcting at this time any previous errors found in the diet. On the other hand supposing at the end of the above stated time your diarrhea has not abated or perhaps gotten worse. Normal saline irrigations used B. I. D. morning and evening may then be used to advantage in conjunction with the barley water diet and in some cases the use of bismuth subcarbonate may be started. Bismuth subnitrate was formerly used but has practically been discarded in favor of the subcarbonate owing to some cases of violent poisoning having been reported from the free use of the former drug. It is only when these simpler measures fail that one goes a step further and commences in conjunction with the aforesaid treatment, stomach washing which then may give the case a turn for the better. However, should your case still be doing badly and the condition of your patient becoming a serious one, opium and like drugs may be exhibited but their use limited to the briefest possible time. I think, however, until this stage is reached, that the use of a lesser or greater amount of such drugs is not only bad therapeutics, but is distinctly contra-indicated.

310 West 99th Street, New York City.

For constipation in infants and young children the most harmless and effective measure is to inject a small amount of oil into the rectun at night, the oil to be retained.

Association of Infant's Milk Stations.—In order to secure more perfect co-operation, an association of Infant's Milk Stations has now been organized, with a central office at the Department of Child Hygiene, by the following agencies: The New York Milk Committee of the Association for Improving the Condition of the Poor; Babies' Dairies; New York Diet Kitchen Association; Nathan Straus Pasterized Milk Laboratories; Nurses' Settlement; Morningside Milk Dispensary; The Brooklyn Children's Aid Society. There are at present in operation sixty-six milk stations in the borough of Manhattan, twenty-three in Brooklyn, and one in the Bronx, and by dividing the city into districts it is hoped to prevent duplication of effort, not only as regards the supplying of pure milk, but also the matter of medical attendance and nursing for sick infants.

SOCIETY TRANSACTIONS

ST. LOUIS PEDIATRIC SOCIETY.

Stated Meeting, April 27th, 1911.

Dr. L. S. Luton read a very interesting paper, A Case of Purpura Treated with Human Blood Serum, (published in another department of this issue).

Dr. Bleyer in the discussion said: "I do not quite understand Dr. Hurford's classification of cases of purpura. I have seen a few cases and also a few cases of melena, most of the melena cases died. I recall one, however, which recovered although it did not receive human blood serum, but was treated with chloride of calcium. The only hemorrhage was from the bowel with a slight hemorrhage into one conjunctivia. The child was fortunately fed on mother's milk and was not a septic case, at least it did not run a temperature, as I recollect there was no luetic history. At any rate the child recovered, but did not get blood serum. My impression is that this case did not belong to the group to which Dr. Hurford refers.

Dr. Lippman:

For discussing the case we must recognize our position in not knowing the etiology of this disease. This makes it so much more regrettable that the blood could not be studied more carefully. As to the treatment, blood serum seems to gain more and more in favor. The reports I have seen in the liter ture, seem to be very reasonable.

Dr. Gordon:

Since the question of malena came up, reminds me of several cases of hospital practice. We always regarded these as infectious and they were accompanied by high fever. Occasionally one got well. There was vomiting of blood and a bloody discharge from the umbilicus. I have not seen a case like this one.

Dr. L. S. Luton: Closing.

Of course purpura is to be distinguished from hemophilia and the hemorrhages of the new born. As Dr. Hereford points out, coagulation time is about normal. The use of human blood serum in the treatment of bleeding in the new born was popularized more or less by Weil, and I thought possibly it might do some good in this case.

I think the statement is true that the child would have recovered anyway. The blood serum was kept four days, and as is well known fibrine ferment disappears on standing. Furthermore the use of even fresh serum in usual amounts provokes the production of anti-ferment which of course would antidote the ferment. In hemorrhagic cases in the new born we can do a great deal apparently by blood serum but what it may do in purpura is problematical. I regret very much we did not make a blood culture. Welch had a mortality of one out of eight in the hemorrhagic cases in which he used it while without the serum the mortality will run 30 to 60 per cent. or about one-half of them died. I thank the gentlemen for their discussion of this case, it was presented simply to bring out a discussion of the probabilities of the human blood serum. It would seem that blood transfusion should be given a thorough trial in these cases.

CANADIAN MEDICAL ASSOCIATION.

The fourth annual meeting of the Canadian Medical Association held its annual meeting on June 7, 8 and 9. The meeting was extremely well attended, many medical graduates of McGill University having come to take part in the opening ceremonial in connection with the new medical building on June

5 and 6. The programme was lengthy and, on the whole, of a high standard. Three symposiums were held, on acute poliomyelitis, on typhoid fever and on temperature in the puerperium respectively. The one on typhoid fever was particularly good and perhaps was the cheif feature of the meeting. There was no section on pediatrics and the papers relating to children's diseases were few in number.

Symposium on Typhoid Fever.—In the discussions on this subject a very important point was settled. Dr. T. A. Starkey, Professor of Hygiene at McGill University, and Chairman of the Section of Preventive Medicine has insisted for several years that in most, if not all epidemics of typhoid fever, which have occurred in the Province of Quebec and presumably elsewhere, that *typhoid-like* infections have been conspicuous elements. By typhoid-like infections or para-typhoid infections, are meant those infections which are not true typhoid, that is, infections which do not react to the Widal test. Dr. Starkey is of the opinion that, as a rule, these infections are more numerous during an epidemic of typhoid fever than those of true typhoid, but are termed frequently, intestinal grip and lightly regarded by medical practitioners. Few of such cases find their way into hospitals for the reason that only cases are received therein that respond to the Widal test and therefore are overlooked or not mentioned in statistics. Dr. Starkey claims that *typhoid-like* infections should not be lightly regarded but treated in the same manner as true typhoid infections. They will spread, and sometimes they give rise to a considerable amount of intestinal disturbance ending often in organic disease. This view of the situation was taken by the majority of those present at the symposium, and Professor Adami said that the wisest course to pursue was to treat typhoid and *typhoid-like* infections in a similar manner. Moreover, it was agreed that enteric fever was a by far more fitting and definite term for what is known as typhoid fever than that appellation.

It is a somewhat curious coincidence that in the British Medical Journal, June 3, a communication appeared from Lieutenant Colonel Frith of the British Army Medical Corps, serving in India, calling attention to the presence of the para-typhoid infections in epidemics of typhoid fever. Col. Frith sent his communication in the sense of a discovery, so to speak, and went on to say that the medical officers of the British Army in India knew much more concerning typhoid fever than the practitioner in England, because in that country they were having constant experience of epidemics on a large scale. As a matter of fact, Dr. Starkey has endeavored to impress upon the medical profession and public of Canada for some time the point that epidemics of typhoid fever are always largely attended by *typhoid-like* infections. Furthermore in Canada, and especially in Montreal and vicinity, there could not be better opportunities for studying typhoid fever under favorable conditions. Large epidemics of the disease are frequent in Montreal and smaller epidemics often happen in the Province of Quebec. Therefore, the credit of first drawing attention to the prevalence of *typhoid-like* infections in typhoid fever epidemics is distinctly due to Dr. Starkey and not to Col. Frith. Now, these *typhoid-like* affections are important from the point of view of pediatrics. Young children can contract typhoid fever, and children generally are subject to *typhoid-like* infections. Such infections too, are obviously dangerous to children, and therefore it is in the interests of children that para-typhoid affections should be regarded seriously by medical men. Professor Starkey pointed out that the water supplies of Canadian cities were greatly contaminated, that until this evil was remedied by filtration, typhoid fever epidemics must be expected. Col. Jones of Ottawa, who read a paper on water supplies, as chief channels of infection, deprecated the use of chloride of lime for the purpose of water purification, or rather, he pointed out that this means of purification was, at best, but a stop gap and that in all large Canadian cities effective methods of safeguarding a water supply should be forthwith adopted.

The Problem of the Unfit vs. Preventive Medicine, the Medicine of the Future.—If the symposium on typhoid fever was the main feature of the meeting, the feature next in importance was the address in medicine delivered by Sir James Barr, of Liverpool. Sir James Barr is in his way a noted speaker, like Carlyle, famous for his dry wit and humor, and he did not belie his reputation for the possession of these qualities at Montreal. His address was entitled "Preventive Medicine the Medicine of the Future," and dealt mainly with the problen of the unfit. He pointed out that the health of a nation is its most valuable asset and the maintenance of health is of much more importance than the treatment of disease. The struggle for existence is not merely an individual question but is becoming more and more a national question and the nation which produces the finest race is sure to win in the long run. As Professor Arthur Thompson says, "What children usually die of is their parents, and what a nations dies of is lack of men. The countries which have, to a large extent suspended a selective death rate, but have not been wise enough to establish a selective birth rate are certain to decay and go the way of all the ancient nations that have disappeared and make way for more vigorous races." As to questions of inheritance, the speaker said: "Above all, both for the prevention of insanity and consumption, discourage and prevent the propogation of the species by the mental and physical weaklings. Raise up a race which will not be catching tuberculosis or anything else. I would advise you, while showing all possible kindness to the insane and mentally defective to give them clearly to understand that with them, their breed must come to an end. Insanity and mental deficiency are largely questions of inheritance. With the insane, the imbecile, the idiot, the mentally defective, the criminal, the ordinary wastrel, the loafer, the professional pauper, the tramp, the footpad, the drunkard and other mental and physical degenerates, prevention is certainly better than cure, but you will never succeed in either prevention or cure by maudlin sentimentality." On the subject of children's complaints, Sir James said: "It will be very difficult to prevent the spread of infectious diseases amon g children so long as we have overcrowding, defective ventilation, dust and want of cleanliness in the homes, schools and public conveyances. However, a great deal can be done for local conditions, by looking after the children's teeth, by seeing that their jaws and teeth get plenty of exercise in chewing food, by keeping their mouths and nasal passages as aseptic as possible, and by removing any obstructions, such as adenoids and enlarged tonsils."

The Symposium on Acute Poliomyelitis was a partial success. The statistics of the incidents of the disease and of some of its other relations contributed by Dr. C. A. Hodgetts of Ottawa were instuctive. The Com mission of Conservation in Canada sent out in November last a circular letter of inquiry with regard to acute poliomyelitis to the physicians in Canada Of the 8,000 letters sent out, replies were received from 316 medical practitioners and in this manner the history of 658 cases were reported as occurring between November, 1909, and October 31, 1910. In Ontario, 658 cases; in Quebec 354; in British Columbia 168; in Alberta 27; in Manitoba 17; in New Brunswick 12; in Saskatchawan 6; in Nova Soctia 6; in Prince Edward's Island 1. As to sex incidence of 528 cases, 293 were males and 255 females. Of the total number where age was stated (544) only 23 were over the age of 17 years. Of the remainder, (341) or 64 per cent., were between the ages of one and five years. A comparison of age incidence made in epidemics occurring in New York, Boston and in Canada, the following facts were brought out: In the New York epidemic 90 per cent. were under five years of age. In Boston 71 per cent., and in Canada 65 per cent. In New York outbreak over 99 per cent. of the cases were under twenty. The disease was most prevalent in Canada in August, September and October. There were forty-six deaths among 658 cases reported. A paper was read on the etiology and pathology of acute poliomyelitis, which presented no novel features. Perhaps the most interesting paper read was that dealing with its surgical treatment by Dr. Mackenzie Forbes, Montreal. He stated that in the months of degeneration and regeneration after an attack of acute poliomyelitis, surgical treatment must go hand in hand with neurological treatment and this surgical treatment must aim at the prevention of pseudo-paralysis due to stretching and deformities produced by contraction. It is at this time that rest from weight-bearing is indicated. It seems that mechanical appliances have distinct, but limited place in treatment. Having spoken of the limited usefulness of braces and supporting appliances, Dr. Forbes thinks it wise to mention that in the fashioning of a brace, one must always bear in mind that its chief use is to preserve muscles and that it may, if carelessly prescribed, by contracting the limb and preventing free circulation and function,condemn to greater deformity an already affected part, The braces should always be light, simple and readily removable, non-constricting and often removed. Forbes then described various surgical measures which are sometimes called for in deformities and constructions which may follow an attack of acute poliomyelitis.

The Milk Problem.—in the section of preventive Medicine, the milk question was discussed at considerable length. Dr. J. J. McCaney, Inspector of Foods for Montreal, advised that steps be taken to effect improvements at the source of milk production, by insisting in the right inspection of all milk-producing herds, as a preventive of contamination by disease germs. "Sooner or later," said Dr. McCaney, "an impure milk supply causes the death of the infants who drink the product. Where a man is wilfully negligent of this fact he becomes criminally responsible for the deaths wrought and should be severely punished under the law. Where he is ignorant of the results of his carelessness, steps should be taken to enlighten him for the benefit of the city or section of the country in which he lives." Dr. McCaney proceeded to say tuberculosis may be readily detected by clinical examination, where human beings are concerned, but veterinary surgeons will often fail to daignose bovine tuberculosis as such. The tuberculine test is the best way of revealing the presence of the disease and efforts should be made to extend its use. Dr. T. P. Shaw discussed the milk question from the standpoint of food for infants and convalescents and stated that while the improved conditions of modern living tended to decrease mortality, the same did not apply to the infant population under one year. Dr. Shaw is of the opinion that all cities should establish bacterial standards for milk as well as standards for the composition of the milk, all of which should be sold in sealed bottles. Pasteurized milk is to be preferred to the dirty pasteurized product, but it should be labeled as such and bear the date of pasteurization. Dr. F. H. Whitclaw, of Edmonton, Lt. Col. Jones and Major Drum, of Ottawa, read papers on the question of milk and the supply in their respective cities.

RETROSPECT OF CURRENT PEDIATRIC LITERATURE.

Diseases of the Nervous System in Children

Under the Charge of

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The Role of Syphilis in the Etiology of the Spastic Palsies of Infancy and Childhood.—In the *British Medical Journal* for the current year, Charles R. Box of London presents a paper on "The Syphilitic Factor in the Hemiplegias and Diplegias of Infancy and Childhood." The author believes that the general consensus of opinion that syphilis is not a common factor in the spastic palsies of childhood is based on very good grounds, but thinks that it may more often be a factor than is generally thought. Mott's experience in the London County Asylums is quoted. Mott believes that rare as juvenile general paresis is, the specific infantile hemiplegias and diplegias were rarer still. It is important to mention this opinion because, owing to the immense number of cases under this authority's observation the belief received wide credence. It is sufficient to remark here that such a statement by an observer of so large a clinical materian can mean but one thing, and that is that Mott mistook many of his cases of active cerebral specific disease for cases of general paresis. It is sometimes, even in the adult, extremely difficult to differentiate between the active and the parasyphilitic cerebral affection, and in childhood the difficulty is at least as great. We can only infer that Mott did not successfully differentiate his cases, for, while general paresis in childhood is relatively rare, cerebral syphilis is comparatively common in that period of life, and palsies intercurrent in its course are not at all rare. These palsies when they involve the limbs usually take the form of a hemiplegia, occasionally a monoplegia, almost never a diplegia. The hemiplegia is sometimes alternating, that is it may appear in the form of a paresis of one-half of the body, gradually subsiding and appearing in the other half of the body. One reason why these specific palsies of the limbs in children are not more often noted is because they often take the form of motor weakness, without actual paralysis. In such cases the increase of the reflexes should give rise to suspicion of the real presence of a hemiparesis.

Box suggests that one reason for the apparent rarity of reported cases lies in the fact that so many syphilitic infants perish before, or soon after birth from convulsions, meningitis or by hydrocephalus. There is no question that such is the case, and in many instances of syphilitic children, I have obtained histories in which several other children were said to have died of such affections.

Box states that reports of cases examined post mortem by several English observers give reason to conclude that the pathological changes are similar to those in the adult.

This is true, but of the three forms of specific cerebral involvement, meningitis, arteries, and discrete gummata, meningitis is by far the most common, while discrete gummata of the brain are so unusual in childhood as to be a pathological curiosity. While the typical implication of the basal arteries, as seen in the adult is decidedly less common in the child, the fine cortical branches are always affected. This is usually secondary, or perhap it might be more correct to say coincident with a diffuse gummatous infi tration of the meninges. It is due in larger degree to this extensive involvement of these fine vessels of the pia that the impairment of mentality is so marked a feature of cerebral specific disease in the child. In a considerable percentage of these cases, however, at some time or other during the course of the disease, symptoms of localized motor paresis will be found if the cases are kept under careful observation. This may be transient and may not be evident later in the disease, or it may be permanent and persist to the end, in the form of a monoplegia or hemiplegia, and occasionally the spastic condition in the limbs involved may remain after all of the other symptoms have yielded to treatment, showing a destructive lesion of the cerebral motor area, due to thrombosis, with secondary softening, or the destructive results of hemorrhage. It must be said emphatically that spastic paralysis in the course of juvenile cerebral syphilis is not rare, but is, in fact, common.

Box in considering the question "Can Syphilis Produce Diffuse Cerebral Sclerosis?" believes that the inference that sclerosis is always due to syphilis is quite unwarranted. It most certainly is. He believes however that it may produce it. This subject may be, I think, briefly dismissed. As a matter of fact, cerebral sclerosis is never primary. It is always secondary to a preceding softening or atrophy of the parenchyma, the cells and their neuroses. It may therefore follow any condition producing softening or atrophy, and syphilis is simply one of these conditions.

Box is mistaken in quoting Fouriner as one who believed the post natal hemiplegia in childhood is rarely caused by syphilis.

In a study of Cerebral Syphilis in Childhood published in the *Journal of he American Medical Association*, March 9th and 16th, 1907, I give the details of fifty cases of juvenile and infantile cerebral syphilis, and among these fifty cases, hemiplegia or monoplegia occurs fifteen times, and this does not include the fifteen cases out of twenty-five reported by Haddon (*British Med. Journal*, 1892, II, p. 1164). Since my article, I have had several cases of my own, including one recently treated with salvarsan, which will be reported shortly. With methods of diagnosis recently perfected, common occurrence, relatively to the total incidence of syphilitic involvement of the central nervous system in childhood.

Infant Feeding in Health and Disease

Under the Charge of

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The Feeding of Sick Infants.—Dr. Charles A. Goodrich of Hartford, in a paper read before the Association of American Physicians on the above subject, (*Medical Record*), stated that the object of this paper was to emphasize certain clinical observations concerning the feeding of sick infants, rather than to dwell upon the science of their nutritional needs. Various substitutes for milk feeding in illness were mentioned, such as cereal decoctions, albumin water, a sugar solution and whey; and the low food value of these, as ordinarily prescribed, was pointed out. The special classes of cases in which they were most useful were discussed, together with certain contra-indications for their use. Intolerance of milk was then considered, that occurring in disease, and also that due to some inherent peculiarity present in the infant. A brief mention was made of some of the symptoms occurring in this condition, and the feeding of these cases was outlined. Cereal gruels, either plain or dextrinized, were recommended in such cases. Lastly, the increasing importance of the subject of feeding in surgical cases was alluded to.

Dr. H. Merriman Steell of New Haven, said that he had frequently fed babies with summer diarrhea on well cooked cereals, nearly as thick as the ordinary breakfast foods, and, he believed, with much better results than those obtained by using the weak cereal waters. In cases in which it was necessary to starve the patient for twenty-four or forty-eight hours, he considered water alone the best thing to give, attention being paid to the salts. He agreed with Dr. Goodrich in his recommenda ion of milk sugar as a proper food for tiding over acute cases, and thought that for rectal feeding dextrin in solution probably furnished more absorbable material than any other food at one's command. He referred to the fact that in adding milk sugar to whey the limit of tolerance for sugar might easily be overstepped; because whey itself contained over 4.7 per cent. of their ingredient. He thought that undue stress was often laid upon the character of the stools in convalescent cases of summer diarrhea. This he considered absolutely no contra-indication to beginning milk feeding. A trial of buttermilk was suggested for cases of intolerance for milk in both sick and healthy infants.

Dr. Walter G. Murphy of East Hartford, said that it had been found that children after the age of three or four months often did better on a mixture of milk and barley water than on one of milk and water or any other diluent. Its food value, however, was so little that, if long continued, the patient might suffer from a lack of nourishment. In acute irritative diarrhea the indications were to get rid of all irritating substances in the intestinal tract, and to withhold all food until the vomiting had ceased. In cases in which the babies had some infection and were overfed plenty of water and rest were indicated; and if these children were not too much depressed, they were better without food. In acute fermentative diarrhea, if the child's condition would warrant it, the speaker approved of the withholding of all food until the intestinal tract had been cleared of fermenting substances. In babies whose general condition had not been good, whose powers of resistance were below normal, and who were subject to frequent attacks of diarrhea and vomiting the withdrawal of all food was frequently disastrous. If the stools were offensive, cereal foods, either plain or dextrinized, given to the extent of the digestive capacity, were necessary.

A Statistical Investigation Relative to the Influence of Various Methods of Infant Feeding on the Morbidity and Mortality of Infants.—Dr. W. W. Butterworth of New Orleans, read a paper before the Pediatric Section, American Medical Association, Los Angeles Meeting, on the above subject, (*New York Medical Journal*). He said that from August 1, 1909, to July 31, 1910, he had recorded the deaths of 1,314 infants and complied data of more or less detail as to the feeding in 884 of the cases, the age, sex, color, legitimacy, nationality, and health of parents, the hygienic conditions of the homes, their education, etc. As complete data as possible of the water supply, table food, the ailments of early life, with especial reference to gastro-intestinal disturbances and symptoms, and the general development of the child. From this investigation he concluded that the temperature of the summer is but one of many causative factors. Improvement of sanitation reduced the mortality 50 per cent. and he thought that with education regarding the necessity of breast feeding it would be still more lowered. He attributed part of the lowered mortality to the outdoor living and the use of condensed milk which was low in fats.

Recent Experiences in Artificial Feeding of One Hundred Infants During the First Three Months of Life.—Dr. F. C. Neff of Kansas City, Mo., read a paper before the Pediatric Section, American Medical Association, Los Angeles Meeting, on the above subject, (*New York Medical Journal*). He concluded that the regain of birth-weight was no slower in bottle fed than in breast fed infants, that the normal rectal temperature was 98.6 degrees, and that a higher temperature should be regarded as pathological. He does not consider peptonizing of milk particularily advantageous in young infants, preferring buttermilk, skimmed milk, or malt soup.

Dr. Southworth of New York, read a paper before the Pediatric Section, American Medical Association, Los Angeles Meeting, on the above subject, (*New York Medical Journal*), called particular attention to diagnosing signs of "no milk." He said that the necessity for physiological adjustment between mother and child must not be overlooked and that it would many times account for the child not getting the milk which was really there. He believed that too frequent application to the breast tended to decrease the quantity. He condemned the practice of attempting to fit a proprietary condensed milk to all children and said that he would expect to find rickets in all children so fed.

Dr. McLaren of California had noted that babies under six weeks old would gain in weight rapidly if temporarily fed on condensed milk and would afterward be put upon a modified formula of cow's milk.

Dr. Dranga of California believed that condensed milk had a very definite place in infant feeding because it was essentially clean, lower in fats, and easily adaptable to the needs of the child. He called attention to the lower mortality among poor children of London who were fed on condensed skimmed milk with the addition of cod liver oil to augment the fat. He thought that the common custom of placing children to the breast every two hours had something to do with the lowering of the quantity.

Relation of Gastric to Pancreatic Fat Digestion in Infants.—Dr. J. P. Sedgwick and Dr. F. W. Schultz of Minneapolis, presented this paper, which was read by Dr. Sedgwick. It reviewed gastric lipase in adults and infants, pancreatic fat digestion, and the importance of lipase in the digestion of emulsified fat in milk. Fat-splitting elements were found in the stomach at least as early as the fourteenth day. He gave a resume of their studies in lower animals and infants from which he concluded that the function of gastric lipase was not needed in the infant after the duodenum had been reached.

Contribution on the Value of Albumen Content of Human Milk.—By P. Grosser, (*Jahrbuch f. Kinderheilkunde*, 1911, Vol. LXXIII, p. 101). In order to prove that the albumen and globulin in the whey of human milk are not the cause of its favorable influence on the infant, the author has carried out some very interesting clinical experiments.

By precipitation of human milk with iron hydroxide he obtained an albumen-free whey, and this was added to the casein and fat (curd) of cow's milk.

Four infants (who had previously been fed on mother's milk)—three premature and one marasmic—were fed on the above mixture for comparatively long periods, and throve in the manner characteristic of breast fed children. It is thus undoubted that the beneficial influence of human milk does not depend on the peculiarity of the contained protein (albumen and casein), as is believed by many English and American authorities, but on some other soluble and not precipitable element in the whey.

The Late Effects of the Mode of Feeding During Infancy.—By J. Comby, (*Archiv. de Medecine des Enfants*, February, 1911, p. 133). In an editorial on the above subject Comby quotes some facts obtained by Roger Simon at the Baudelocque Clinique, and which he (the latter) has embodied in a thesis.

The intention of the writer was to see if his manner of feeding during infancy influenced the later development, and for this purpose he investigated the cases of 167 women, who are divided into three classes according to the manner in which they had been nourished during infancy.

Class I included women who had been nourished by a wet nurse; class II, those who had been artificially fed; class III, those who had been suckled by their mother.

Of the cases in class I, only 36 per cent. were above normal height; in class II, 50 per cent. were above the normal; while in class III, of those who had been at the breast for six to ten months 70 per cent. exceeded the average height, of those suckled for ten to thirteen months 68 per cent., and of those suckled for longer periods than thirteen months only 60 per cent. were above the average in height.

It was also found that of the breast fed 22 per cent. reached puberty earlier than the artificially fed, and that many of the artificially fed had complained of gastric disturbances for prolonged periods.

Breast Feeding.—Dr. Effa V. Davis, of Chicago, in (*Amer. Jour. of Clin. Med.*), states. The feeding of a baby at its mother's breast is not so simple a matter that it can be done properly without some study and care by those in charge. More mothers could and would furnish breast milk to their babies with greater ease and comfort to themselves and to their babies if their medical attendants took more pains to teach them the facts about the physiology of lactation.

Some facts to be borne in mind are the following:

In Chicago, last summer, fifteen bottle fed babies died to every one that was breast fed. Mothers should be made to appreciate this fact when bottle feeding is contemplated.

You can dry up a mother's milk by putting the baby to her breast only at long intervals, say morning and evening, or only at night. Such habits will spoil the best wet nurse ever created.

You can check a mother's milk by constant or too many night feedings or by disturbing the woman's hours of sleep in any other way.

You can spoil the best breast milk in the world by feeding the woman too rich food, giving her alcoholic tonics or checking normal exercise.

You can "upset" the baby by putting it to the breast too frequently, loading a half empty stomach with a fresh meal. Vomiting, colic, green stools and diarrhea are some of the results.

You can get the best results by first knowing what the wet nurse yields to her baby, by a system of weighing the child before and after nursing. Every baby-doctor should keep suitable scales to rent or lend for this purpose until he is satisfied on the matter.

The interval between nursings can best be regulated when you know how much milk the baby gets in twenty-four hours. An ordinary baby will thrive best on not more than seven meals in twenty-four hours during the first three months of life, and often will do as well or better on six feedings. An effort should be made early to cut down night feedings, as it favors the welfare both of mother and child.

When the yield of breast milk is scanty and the child not gaining, give an ounce or two of artificial food just after its nursing, rather than omit a breast feeding altogether, if the child is under six months or even older and if the time be midsummer, as such a method keeps the breasts up to their best yielding capacity. The old way of substituting a bottle for one or two feedings only checks the yield of milk all the more.

Mixed feeding, when properly conducted, may be begun with benefit to the nursling in its eighth or ninth month, but the physician *must* instruct the mother *what, when* and *how much* she shall give. The following will do no harm, but will greatly help nourish breast fed babies, when eight or nine months old, if properly prepared given at the proper time and in proper quantities:

"Pap" (stale bread) soaked in boiling water and cooked with cow's milk for a few minutes.

Vegetable soup, strained, with a little toasted bread.

Farina, or any other similar cereal, boiled and served with clean cow's milk.

Teach mothers the value of a drink of pure water to the nursling. Thirst is often mistaken for hunger, especially in summer.

Diseases of the Alimentary System

Under the Charge of

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Classification of Diseases of the Gastro Intestinal Tract.—Finkelstein's Classification of Diseases of the Gastro Intestinal Tract, (*Jol. Minn. State Med. Soc.*, April 1, 1911). Schlutz gives a detailed classification as laid down by Finkelstein. He says that Finkelstein divides all diseases of the alimentary tract into two classes: (*a*) Those in which all symptoms point to a disturbance in the process of digestion and food assimilation; and (*b*) those in which the symptoms indicate that there is some agent other than the food ingested, active as the cause of the disorder.

Among the symptoms characteristic of class *a* he gives lack of or deficient gain in weight, vomiting, diarrhea, symptoms of general intoxication, and temperature rises of varying degree. He maintains that there is a definite connection between the temperature, the intoxication symptoms and the food exhibited. Finkelstein holds that the gastro intestinal disturbance due to food alone is really one disease and that classifications deal only with different stages or degrees of the same disorder.

He divides the alimentary disturbance into four classes. The first phase that of "Bilanz Storung" has for its chief characteristic lack of gain in weight in face of sufficient or more than sufficient food. The second phase he terms "dyspepsie." The chief characteristic of which is fermentation. The third stage is that of decomposition. The fourth form that of intoxication. Finkelstein points out that all other classifications of forms of digestive disturbances are but stages of this large group which terms collectively intoxication, and lays down nine definite symptoms which are characteristic and enables a differential diagnosis from all other disorders of the digestive tract. These are clouding of the sensorium, change of rhythm of respiration, alimentary glycosuria, fever, collapse, diarrhea, albuminuria and casts, and marked loss in weight, and leukocytosis. The breathing is deep without pauses; at times it is short and jerky. The glycosuria is alimentary. Lactose and galactose are generally found.

He emphasizes that an intoxication never occurs without prodrones. The weight curve is abnormal and the temperature irregular.

He considers sugar as the particularly dangerous component for the infant with intoxication.

Amebic Dysentery Problem in North Carolina.—(*Charlotte Med. Jol.*, Feb., 1911). Allan says that ninety per cent. of these cases are diagnosed and treated as chronic malaria; others are treated for appendicitis, gall stones, torpid liver, gastric ulcer, etc. He gives as a reason for this: (1) There is almost always a secondary anemia. (2) Some amebics run at times a low intermittent temperature. (3) The tongue is generally coated, but at times dry, bald and cracked, and the corners of the mouth are eroded. (4) The stomach and intestinal symptoms may be acid eructations, a feeling of heaviness and discomfort after meals, flatulence, pain or soreness over any part of the large intestines. (5) Amebics who work strenuously in spite of poor assimilation may show restlessness, irritability, insomnia, exaggerated reflexes, and other hypochondriacal symptoms. The differential diagnosis consists in the examination of the feces.

Gastric Ulcer in Children.—(*Charlotte Med. Jol.*, Feb., 1911). Nesbet says it would appear from the fact that one of these cases was of three months duration and three of eighteen, twenty-four and thirty-six months respectively that there is an acute and chronic type of the disorder. That in the acute form there is a history of pain after food and that this pain comes rather promptly after taking food, and is partially or completely relieved by vomiting. In the chronic type there was a history of pain after food but more frequently the pain came on two or three hours after.

The Surgical Treatment of Chronic Colitis.—(*Brit. Med. Jol.*, April 15, 1911). D'Arcy Power says that there is a colitis due to simple irritation, one due to protozoal infection, another due to bacteria. The surgeon has no need of an elaborate classification as he is called upon to treat only two classes: those in which a cause may be found and those where the patient is suffering from a toxemia due to the absorption of toxic products from an ulcerating bowel, the cause of the ulceration being unknown.

The colon may be irritated by the long continued presence of scybalas Irritation may be due to the presence of a polypus or an unsuspected cancers more rarely it may be due to actinomycosis, to glanders, to tubercle, to some strain of pneumococcus, to gonorrhea, to syphilis, or to a pericolitis where an abscess had formed outside the bowel and burst into its lumen. When these causes have been eliminated there remains a large group of cases grouped under the heading "ulcerative colitis." In these cases the bowel may be ulcerated locally, or the inflammation may extend throughout its entire extent. The lesion is chronic, destructive and generally extensive. The products of the ulceration are very abundant and their absorption is one of the most serious dangers of the disease. It is important to cleanse the bowel and keep it free from putrefying products. Drainage through the appendix enables this to be done in the most satisfactory manner. It must be clearly understood that appendicostomy will not cure the colitis and the friends of the patient should have this clearly explained to them. The object of the operation is to keep the bowel clean and to prevent absorption of toxic products. The ulcerative process continues until the patient becomes immune either by a natural or artificial process.

Feeding in Gastric Ulcer.—Gustav Singer, (*Wien. Med. Klin.*, No. 51, 1910), has for the last four years carried out, with some modifications, Lenhartz's method of treatment of gastric ulcer, the main principles of which, as compared with those of the older method, being to obtain a larger value in calories with a smaller volume. In spite of the favorable statistics with regard to hemorrhages on Lenhartz's treatment, the author finds that, after a severe hemorrhage, patients can often not bear an immediate beginning of feeding by the mouth. Thus, in one of his cases in which there had been a hemorrhage eight days before admission and another on the day of admission there was a recurrence of bleeding when food was given by the mouth three days after admission, and, again, on another tried four days later; only after six days of rectal feeding alone was combined rectal feeding by the mouth able to be resumed without giving rise to hemorrhage. The increase of weight in cases of gastric ulcer treated on Lenhartz's system is most striking, as seen in diagrams showing the steep rise in the weight curve. Eggs, milk, cream and butter are a good foundation for the diet and are extraordinarily beneficial for the hyperacidity so often present; when there is a good tolerance for fats the author lays special stress on the giving of cream and much butter. Carbohydrates are not absolutely excluded. Nearly always the author adds "hygiama" or bioson to the milk and puree of potatoes, and foods, such as, Nestle's, Mellin's, etc., may be given. When there is much vomiting ice prepared with hygiama and milk has repeatedly been found to give good results. The loss of weight which follows a few days' absolute rest from stomach feeding is not to be considered of importance as it can soon be made up. Indeed, on Lenhartz's system, by the ninth day 2,000 calories of food value are being administered as compared with 1,000 calories on the fourth week on the older method. Rest in bed is one of the most essential conditions of a good cure of ulcer, and Singer finds that his private patients, after a cure has been effected, are much more willing to avoid indiscretions of diet than to permanently cut themselves off from physicial over-exertion. Yet absolute proof that an ulcer has healed is not present after the most apparently successful cure. With respect to treatment by drugs the author has found gelatina alba in five to ten per cent. solution and adrenalin useful in combating hemorrhage, and he often makes use of Parke Davis's extract of mistletoe in doses of two to three teaspoonfuls daily. Anaesthesin acts very favorably on the symptoms, and hypersecretion and hyperacidity are often influenced by the use of the one to two per cent. solution of anaesthesin in mistura amygdalina. When this fails atropine preparations, and especially eumydrin, given subcutaneously, or Merck's methylatropinum bromatum may be successful. Both Lenhartz and Leube lay stress on the early administration of iron in the form of Blaud's pills; the author has often, however, found a great intolerance of Blaud's pills to be present, and is chary of ordering iron in the early stages where recurrence of hemorrhage is threatened. In the later stages he orders iron in an easily assimilable form, especially hemoglobin preparations. In early cases he gives intramuscular injections of "metharsenate de fer." With regard to operations, the author agrees with Payr that enteroanastomosis is indicated in ulcers at or near the pylorus and in stenosis due to scar tissue, but that resection is suitable for extra-pyloric ulcers.

Trichocephalus Enteritis.—Cade and Garin, (*Arch. des mal. de l'appareil digestif et de la nutrition*, June, 1910), point out that the trichocephalus worm is one of the most common of intestinal worms, and that it may give rise to various reflex nervous manifestations to more or less marked anemia, and to toxic symptoms. One of the commonest symptoms produced by this worm is some form of digestive disturbance, and the authors believe that in all cases it causes enteritis, which may be of a dysenteric character, and associated sometimes with short rises of temperature. It is probable that these symptoms are produced as a result of infect on of the body by the microbes normally inhabiting the intestine which are inoculated by the worm; possibly, also, some of the intestinal symptoms may result from nervous disturbance, but this factor probably plays but a small part. Clinically, trichocephalus enteritis shows itself in various forms. Sometimes a severe and rebellious diarrhea occurs, accompanied or not by colicky pains and tenesmus, but usually without much pain. The stools are liquid, yellow, and sometimes mixed with mucus. Visible blood is uncommon but occult blood is almost always present. This diarrheal form resembles very much that due to tuberculous disease of the intestine. If there is much mucus in the stools and there are colicky pains and tenesmus, dysentery is simulated. In other cases constipation alternating with attacks of diarrhea is liable to occur, and the stools then often contain mucus and false membranes; if to these symptoms are added attacks of abdominal pain, muco-membranous entero-colitis, or intestinal dyspepsia is likely to be diagnosed. In these cases there may be pain or pressure over the right iliac fossa, and appendicitis or typhlitis is suspected. Sometimes the symptoms take the form of heaviness after eating, less commonly of pain and rarely of vomiting. Loss of appetite is common. As these patients often exhibit neurotic manifestations their symptoms may be put down to nervous dyspepsia. Headache, dizziness, vertigo, loss of strenth, and asthenia, out of proportion to the general condition of the patient, are also common. A rise of temperature in trichocephalus infection is common, either a moderate rise lasting for some days, or even sudden rises to a greater height. The diagnosis can only be arrived at by, if necessary, repeated examination of the stools for the ova of the worm. Eosinophilia, though helpful, is not by any means a constant sign in trichocephalus infection. With regard to the treatment of this condition, the author adopts the following method: Thymol in one gram doses is given in the form of a cachet three or four times a day for three or four days, and this is followed by a saline purge. No wine, alcohol, or oil should be taken during the treatment. This treatment should be resumed, if necessary, after a few days. Although it is not always successful in removing the worms, even after several seances, it is absolutely devoid of danger, and in every case causes decided amelioration of the symptoms. The author considers that in persons suffering from vague intestinal symptoms of indefinite causation, a search should be made for ova of worms in the stools, as if these be found a definite and rational line of treatment can be adopted.

Treatment of Stricture of Oesophagus.—At a meeting of the Spanish Medico-Chirurgical Academy, (*Revista de Med. y de Cir. Practicas*, February 14th, 1911), Goyannes read a paper on new methods of treating strictures of the oesophagus. He showed a girl of 17 who drank by mistake some caustic soda in a laundry, and was immediately seized with intense gastric pain accompanied by hematemesis. For a fortnight no food could be administered except by the rectum. A proctitis caused this to be suspended, and recourse had to be taken to endeavoring to get her to swallow a few drops of milk and water. Tolerance of food and power of deglutition were gradually re-established, and at the end of six months the patient could swallow a little bread soaked in milk, and she began to regain weight. On examination with the sound an impermeable stricture was detected 25 cm. from the dental line. Swallowing of liquids is very dilatory, and at times followed by regurgitation. No scars can be detected in the mouth. Even the finest bougie (olivary) cannot be passed. Examined with Bruning's oesophagoscope an annular stricture, white and cicatricial, is detected, above which a slightly dilated reddish zone extends for two cm. The stricture measures two or three mm. at its orifice, and at its level the oesophageal wall is rigid. An incision was made in the middle line above the umbilicus, the anterior wall of the stomach was attached by sutures to the parietal peritoneum, and was then incised for two centimetres. Through the opening thus made was then drawn the point of a fine urethral catheter which had previously been passed from the mouth through the stricture and into the stomach. To the lower extremity of this catheter was attached a stout silk thread, which was then drawn up through the mouth and fixed to the ear. The stomach wound was then closed and subsequently that in the abdominal wall, leaving room, however, for the gastric end of the silk cord to emerge at its lowest angle. With the aid of the silk cord, on the very day of the operation, a fine Nelaton's sound was drawn from the mouth into the stomach, and by this means a good quantity of milk was introduced. By this simple method the structure was dilated daily, until a Nelaton's sound, No. 30 Charriere, could be passed. After the eighth day the patient was able to swallow liquids. The wound healed by first intention, except for a tiny fistula necessitated by the exit of the silk cord. The recovery of the patient was complete and uneventful.

Bacillary Dysentery, Its Bacteriology, Biochemistry and Their Relative Treatment.—(*Bos. Med. and Surg. Jol.*, March 2, 1911). Kendall regards bacillary dysentery as a serious disease, particularly in young children and considers it of great importance both to the community and the patient to be able to diagnose cases of true dysentery caused by the dysentery bacillus and cases of severe entero colitis of unknown etiology. He quotes Stengel: "It is practically impossible to separate cases of entero colitis due to ordinary causes from instances of epidemic diarrhea prodeced by B. dysenterie except by bacteriological methods."

The author gives the cardinal symptoms of bacillary dysentery as diarrhea, tenesmus, continued fever and prostration, mucus and usually pus in the stools. Many cases which have the classical symptom complex, bacteriological examination does not reveal the B. dysenterie, while on the contrary, gas bacilli (B. nelchii) could readily be demonstrated. These cases therefore, should not be classed as instances of bacillary dysenterie, but, as belonging to the fermental group. It is well to bear in mind that the number of bacilli that can be demonstrated in the feces of dysentery patients bear no constant relation to the severity of the disease.

In dysentery cases, especially in infants and young children, the routine treatment has been to withhold all food for several days. This preliminary starvation with the frequent alvine stools results in a thorough cleaning of the bowel so far as food is concerned.

It was shown that bacteria acting respectively upon carbohydrate and protein produce from the former fermentative changes and from the latter putrefactive substances. The fermentative processes take precedence over the putrefactive if both carbohydrate and proteid are simultaneously present in the medium in which the bacteria are growing; the carbohydrate spares the protein in a similar manner to that obtaining in the animal body where carbohydrate shields protein from metabolism

Two portions of regular nutrient boullion of precisely the same composition and reaction with the exception that one contained one per cent. of dextrose, were inoculated with the same strain of B. coli and incubated at body temperature for about ten days, then examined bacteriologically and chemically. Bacteriological examination revealed that the cultures were pure, containing only those inoculated. Chemically, that portion of the boullion containing the dextrose had an agreeable odor, a decided acid reaction, besides CO_2 and H_2, considerable amounts of lactic, acetic and succinic acids. No products of protein breakdown could be found. The portion of boullion containing the same proteid without the dextrose was foul smelling and strongly alkaline. NH_3 and H_2S were freely found, and, in addition, the medium contained relatively large amounts of typical putrefactive products—indol, some skatol, aromatic oxy-acids and basic bodies. In the one case a typical fermentation, in the other typical putrefactive results.

The characteristic flora of the bacillary dysentery as seen in Boston are essentially the B. dysentery, B. coli, and streptococci. Under the influence of a lactose diet, the streptococci tend to disappear. The colon bacilli become reduced in numbers and fermentative rather than putrefactive. The dysentery bacilli also tend to disappear.

Certain drawbacks to the feeding of lactose present themselves as, glycosuria, intolerance of sugar and excoriations. The intolerance was not manifest in any of the cases, in two glycosuria was detected, severe excoriations did not occur.

Author's Summary.—The patient was first given a dose of castor oil or other cathartic. All food except sterile water was withheld twelve to fifteen hours. Lactose five per cent. solution in sterile water, is then fed by mouth for several days, until the acute symptoms abate, or until it becomes apparent that the patient needs some nitrogenous food. Whatever nitrogenous food is selected must be fed cautiously, in small amounts, simultaneously with an excess of utilizable carbohydrate.

The lactose should be fed in rather small amounts, often repeated to keep up this stream of sugar in the alimentary canal, otherwise the proteolytes will be able to attack what nitrogenous substances may be present.

Dextrose (Kahlbaum's) may be infused preferably as a 2.5 per cent. solution in physiological salt solution to bring to normal the dextrose content of the blood and to furnish fluid to the patient.

Infectious Diseases

Under the Charge of

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Epidemology of Diphtheria.—The diphtheria bacillus carrier is now the recognized cause of the spread of the disease in a large number of cases. Bacilli has been known to persist in secretions from the nose and throat for 670 days—(Ada E. Schweitzer, *Indianapolis Medical Journal*). There is no marked difference in patients who have been given anti-toxine and those who have not received it. It is difficult to predict how long the bacilli may persist. The following case illustrates well the danger of carriers.

At Loogootee, Indiana during October and November, 1910, a peculiarly obstinate epidemic of diphtheria occurred. The day schools and Sunday schools were closed. Anti-toxine was used freely, quarantine was rigid. The people became greatly alarmed on account of the number of deaths. When the schools were reopened, new cases immediately developed. They were closed again and disinfected and anti-toxine used freely. The schools were again reopened. The disease occurred again and the people were panic stricken. It was decided to take cultures of all children applying for entrance before allowing a repetition of the former epidemics.

Of 282 cultures from school children taken during the ten days, beginning October 13th, 35 were found to be positive. Another lot of 122 cultures showed 25 to be positive. Of the total of 479 cultures sent for diagnosis, 17 per cent. were found to be positive. In those children cultures from whose throats showed positive there was usually a history of colds and sore throats. It is quite evident that if the same care in admitting children to school that is observed in regard to vaccination was carried out in regard to diphtheria namely, the requirement of a negative culture from the nose and throat before entrance, diphtheria would be greatly diminished in a short time.

Exceptional Forms of Erysipelas in Infants.—Milhit and Stevenin (*Progres Medical*, Jan. 28, p. 41). In the service of Professor Hutinel the writers have observed a certain number of cases of erysipelas in infants, of which some were due to contamination of the umbilical wound. As well as cases in which the signs were characteristic, certain exceptional forms, liable to be misunderstood, occurred.

In one form erysipelas manifests itself as an edema of ordinary appearance, which may be localized or generalized, fixed in position or extremely mobile, hard or soft. The characters of inflammatory edema are absent; the color is white, or very slightly rosy. The general condition of the infant may be unaffected and there may be no fever, but even then the prognosis is grave, especially in infants under one month.

A boy, aged eight months, was taken to hospital because he was feverish and vomited. The temperature was 103.1 degrees. The symptoms were attributed to gastro-intestinal disturbance and slight bronchitis. Incidentally it was observed that the abdomen seemed enlarged and tender in the hepatic region. Next day there was hard circumscribed edema in the hypochondrium, which Professor Hutinel did not hesitate to diagnose as an abnormal form of erysipelas. At the edge of the edema there was not the characteristic ridge but a rosy line. The local temperature was elevated. On puncture serous fluid swarming with streptococci was obtained. The general condition was good and recovery took place in four or five days. Local desquamation followed.

A boy, aged one month, was brought to hospital by his mother because his legs had been swollen for two days. There was no fever or serious general symptoms. After discussing various possibilities—edema of the new-born, cardiac and renal edema, thrombosis of the renal veins—Professor Hutinel diagnosed erysipelas because of the existence in places of a little rosy line at the periphery adenopathy, and the presence also on the back of the edema with a rosy peripheral line. Next day there was moderate pyrexia, the general condition was worse, the edema had spread from the legs half-way up the abdomen, and from the back to the neck. On the evening of the following day the child had died.

In another exceptional form erysipelas causes multiple abscesses, and the primary condition is liable to be overlooked.

A well nourished male child, aged 35 days and breast fed, was taken to the surgical department of a hospital on April 19, 1909, for an abscess of the left foot, which was incised. He was subsequently taken to the medical department because he had wasted for some days and his arms and legs were swollen. There were a second abscess on the right foot, swelling of the feet, legs, and scrotum, and slight edema of the abdominal wall and forearms, but the temperature was normal. However, in many places a red line was found and also some desquamating patches. Erysipelas was therefore diagnosed. On the 21st there were a ridge across the abdomen three cm. above the umbilicus, marked swelling of the scrotum, and edema of the penis. On the 23rd the edema of the abdomen had disappeared, that of the left leg had diminished but the right leg was very edematous and red, and the left arm and hand were edematous. On the 26th there was an abscess on the left hand and the edema had reappeared on the abdomen. The abscess on the hand was incised and yielded pus containing streptococci and staphylococci. The erysipelas invaded the scalp and eyelids. Abscesses on the left foot, right lumbo-sacral region, left internal malleolus, right external malleolus, and scrotum followed, and the erysipelas recurred in several of its former sites. On May 24 recovery was complete.

Erysipelas in the child, and especially in the infant, rarely shows the characteristic local and general symptoms found in the adult. When edema is present a faint rosy line should be looked for at the periphery and also desquamating patches. These conditions, even in the absence of fever, are sufficient for the diagnosis of erysipelas, which may be confirmed by the rapid evolution of the disease and by finding streptococci in the serous exudation.

Carriers in Relation to the Spread of Diphtheria.—Eben C. Hill, United States Army, describes an epidemic of diphtheria occurring in an isolated army post, in which the first case occurred in a man employed in the meat shop where all meats for the post were bought. This man was sick with nasal diphtheria for some three weeks before his case was diagnosed by culture. The second case was in a boy who had frequently been to this market. From these developed a number of other typical cases and many well carriers of the bacilli were discovered by cultures. These were at once isolated until free from germs. All were immunized with 1,000 units of anti-toxin, including the infants, and no bad effects were observed. At the close of the epidemic no disinfection of houses was done, yet no further spread occurred. This epidemic emphasizes the fact that it is the carriers and undiagnosed cases that spread the disease, and not clothing and other fomites.—*Medical Record*, June 10, 1911.

Tuberculous Meningitis in Newly Born Infants.—Tuberculous meningitis has long been held to be a rare disease in children under two years of age. Dr. M. Lafarcinade of the Faculty of Medicine of Paris, writing in the *Medical Press and Circular*, April 19, says that out of forty-two cases of this malady collected by him and not previously published over twenty-two occurred in infants under two years of age. The hemiplegic or eclamptic form is found in suckling infants, and gradually results in a state of coma. The somnolent form, however, is characterized by the four following symptoms: Progressive somnolence, ocular catalepsy, progressive emaciation, instability and irregularity of the pulse. Gradually the tendency to somnolence becomes more marked, the child is nearly always asleep, and ultimately the sleepiness culminates in deep coma. Ocular catalepsy is due to the absence of palpebral winking, to amblyopia, and the disappearance of the conjunctival reflex. The affected child sleeps with his eyes wide open but without seeing. Progresive emaciation dates from the prodromal period. As to the instability of the pulse, this consists in the fact that if the pulse of a meningitic subject is examined several times a day considerable difference will be noted. In addition to these four principal symptoms Lafarcinade says that vomiting or diarrhea is often present. However, these symptoms, instead of facilitating the diagnosis of the disease, not infrequently lead the physician astray and he is liable to diagnose gastro-enteritis. When the disease is fully developed it proceeds on its unvarying course, finally merging into coma and death. In all the cases observed by the writer the termination was fatal. From the nature of the disease the treatment is only symptomatic and necessarily ineffectual.

The Etiology of Epidemic Poliomyelitis and Its Possible Relation to Beriberi.—O. V. Huffman, Cincinnati, Ohio, believes that beriberi and multiple neuritis have often been confused with anterior poliomyelitis. Lesions have been found in the anterior horns of the spinal cord in cases of neuritis. Multiple neuritis and poliomyelitis are identical disease processes; both show degeneration and infiltration in the nerves. There is no great difference between the symptoms of the two diseases. The author considers the diseases as occurring in epidemics only, the sporadic cases being left out of consideration. Beriberi often affects the lower extremities, like poliomyelitis, but may involve the upper ones. Edema is not as often seen as has been supposed. The author notes the epidemics of poliomyelitis that have been observed in different parts of the world. Seaports are usually the first places involved in the epidemics. Quarantine has seemed to be effective in checking the spread of poliomyelitis. It may be spread by a common parasite, such as the flea, louse, or bedbug, or by an insect from tropical fruits. The domestic animals such as the horse, dog, and chicken are affected by poliomyelitis. This would seem to be caused by faulty foods. Beriberi is also associated with faulty feeding; rice, barley, or flour may be suspected as causative factors. The analogy of the two diseases is worthy of notice.–*Medical Record*.June 17,'11.

The Static Wave Current in Anterior Poliomyelitis.—Anything that has the slightest chance to assist in the treatment of anterior poliomyelitis must prove of interest to every general practitioner. Of course, it must be admitted that the results of ordinary treatment in subdueing the infiltration associated with the inflammatory process in the cord and meninges has been disappointing. Hence it is not surprising that the suggestion to employ therapeutically the static current for the purpose mentioned has aroused a trifle of skepticism. But the *Journal of Advanced Therapeutics* (December) is most emphatic in declaring that when the current is properly applied, good results are obtained.

"There is abundant indication that the application of the static wave current with a narrow metal electrode over the cord does relieve local infiltration and congestion in the cord and meninges. In the treatment of anterior poliomyelitis there are abundant results to verify such conclusion. In cases in which the lesion has been present without change for the better during several months, the restoration, though incomplete, is marked and progressive from its employment. In the early cases the application of this current with a long spark-gap (six to twelve inches) for twenty minutes daily, as described, will in most, if not all cases, restore the paralyzed parts by relieving the local conditions of pressure within the cord. That few neurologists now appreciate this fact is patent to the reader of current medical literature."

Diseases of the Skin and Uro-Genital System

Under the Charge of

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The Sterilization of Rubber Catheters and Their Aseptic Conservation.—Dr. Martin W. Ware, (*American Journal of Surgery*). After an elaborate description of the ways in which instruments that are to be introduced into the urethra should be sterilized, Dr. Ware arrives at the following summary of method:

1. Wash in cold water to remove blood and pus from the catheters.
2. Use green soap and warm water and force this through the catheter, or shake catheter in a test tube with green soap.
3. Plain water washing.
4. Removal of water from interior by shaking, or, preferably, by compressed air.
5. Dry exterior of catheter with a piece of gauze.
6. Spread catheter on a clean sheet in which they are loosely rolled to absorb any moisture and become air dry.
7. Place in envelopes of parchment paper and label.
8. Sterilization. (Tyndalization.)

The Pathology and Pathogenesis of Syphilis.—Dr. O. T. Schultz, (*Cleveland Medical Journal*, Cleveland, Ohio, October 1, 1910). The author reviews the development of our knowledge of the parasitology or etiology of syphilis and attempts to indicate the ways in which our understanding of its pathogenesis has been increased through the discovery of the parasite and tries to determine in this way whether this increased information does not give us a common basis for the better understanding of the protean character of this disease.

Of lat e with the development of bacteriology there began an active worldwide search for the unknown contagium vivum, and Schaudinn and Hoffmann in 1895 discovered the occurrence of the so-called spirocheta pallida in syphilitic tissues. This micro-organism is now-a-days generally considered to be the etiological factor of lues. This parasite, though it has in general the morphological character of the genuine spirochetae, should by rights be called "treponema pallidum," because it biologically belongs to the class of protozoa. It is 6-15 micrometers long, sometimes even 25, and very thin, 0.25 microns in diameter. The spirals are numerous, close and very regular. Unstained, the organism is very slightly refractile, so that it is seen with difficulty. It is actively motile, moving either directly backward or forward. This direct movement may be, but need not necessarily be associated with a rotatory movement. The spirals remain fixed during rest, but wave like undulations may pass from one end of the body to the other. These three forms of motion, progression, rotation and undulation, are indications of rather high specialization of the body protoplasm. The organism stains with difficulty and but faintly, and even in the stained condition is difficult to see. Schaudinn used the mixture known as Giemsa's stain. Several other stains have since been recommended as staining more rapidly. The author's experience leads him to still prefer Giemsa's stain.

A technical procedure which we owe to Levaditi, enables us to study the pathological changes of syphilis very minutely as well as to see the organisms in the tissues.

By the use of this silver impregnation method the relation of the parasites to the lesions can be investigated. Study of the localization of the organisms in the tissues is necessary to an explanation of the way in which the lesions are produced, that is, such study is essential for gaining an insight into the pathogenesis of lues.

The lesions of the so-called primary and secondary stages are shown to be of the same character probably due to the invasion of the treponema and also to the circulatory disturbances. The opaque yellowish appearance of the syphilitic pustules is due to necrosis and not to purulent inflammation. The gumma, although a lesion, structurally, not absolutely characteristic of syphilis, he considers to be infectious. This has been proved by its transmissibility to monkeys and by the occasional occurrence of the trepanosoma in gummatous lesions.

In the newly-born infant syphilis may produce the classical complex of pathological changes with which we are familiar and one does not hesitate to make a diagnosis of lues if the lungs, liver and spleen show diffuse inflammation characterized by connective tissue proliferation and lymphoid infiltration and if the advancing ossification lines are irregularly thickened. He wishes to insist, however, that exactly similar alterations in individual organs may occur not due to syphilis. A chronic interstitial pneumonia, not to be distinguished microscopically from a true pneumonia alba occurs with considerable frequency in marasmatic infants. Increase in the stroma of the spleen is not at all uncommon. Bone lesions like those which occur in congenital syphilis, may be met with in rhachitis, in osteogenesis imperfecta and in chondrodystrophia fetalis. Chronic interstitial inflammation of the liver, pancreas and kidneys not due to syphilis is rare but does occur. The histological diagnosis of congenital Lues is not, then, so simple a matter as is generally believed. If all the organs and tissues mentioned are involved at the same time a diagnosis of lues is justifiable, but there is a considerable chance for error if the diagnosis is based upon the presence of change in any one of two organs. The microscopic diagnosis of hereditary Lues is further complicated by the fact that cases rich in treponemata may show none of the changes that are usually considered characteristic of the disease. In the matter of the histological diagnosis of congenital syphilis one may err therefore in two directions: firstly, in basing the diagnosis upon inflammatory changes which are not necessarily specific, and secondly, in failing to recognize syphilis in those cases in which the presence of the specific parasite in large numbers is not associated with an inflammatory reaction. These two possibilities of error are avoided by the use of the silver impregnation method.

The pathological picture presented by congenital syphilis differs from that of the acquired disease. The explanation of these differences and of the absence of tissue changes in certain cases becomes apparent if the nature of the infection in the infant is borne in mind. Neonatal syphilis, as one knows it—that is, infants born either dead or alive during the latter half of pregnancy and showing evidence of lues, cannot be considered a germinal infection. The evidence (the nature of the tissue involvement and the large number of parasites which may be present), is indicative of placental infection occurring after conception and is against infection of either spermatozoon or ovum. As our knowledge of the actual agents concerned in the causation of infectious diseases has increased, the number of such diseases which may be considered truly hereditary has become more and more restricted. Syphilis is perhaps the only one in which it is still supposed that the paternal sins may be visited upon the progeny by the way of the sperm cells. He is convinced that even syphilis must be removed from this category. Concerning the correctness of Colle's dictum, that the mother who gives birth to a syphilitic infant is herself immune to the disease, there can be no doubt, but there has always been room for question in the matter of the interpretation of this fact. On the one hand, granted the occurrence of germinal infection, there is the possibility that the mother derives her immunity from the foetus without herself ever having been actively infected; per contra, if the fetal infection occurs by the way of the placental circulation it must follow that the mother herself was the bearer of the treponemata, in order that the infection of the fetus might occur. The latter seems to him the more actual interpretation of Colle's law. In other words, the immunity of the mother of a luetic child is an active immunity resulting from an attack of the disease. Work with the Wassermann reaction shows that such mothers give positive reactions in practically every case. While this is not absolute evidence against the possibility of the acquisition of a passive immunity from the fetus, I am inclined to believe that it is a further point in favor of the statement that the mother of a syphilitic child is herself infected.

Bearing in mind the hematogenous nature of the infection in neonatal syphilis the mode of production of the resulting lesions is more easily understood and it is seen that the same basic process underlies both acquired and congenital syphilis. In the latter condition the infection is much heavier and the organisms are introduced directly into the circulation in relatively large numbers instead of being secondarily transmitted by the circulation from the primary focus in which the multiplication has occurred. The relation of the so-called parasyphilitic diseases, tabes dorsalis and dementia paralytica, to syphilis is much the same as that of arteriosclerosis to lues. Neither shows an inflammatory reaction which can be considered the result of the localization of the treponema pallidum. No matter whether or no either can ever occur without a previous attack of lues, neither has the pathogenesis of such lesions as are produced by the syphilis parasite. But that they are in very many cases at least, the indirect results of lues, just as is true of diffuse arteriosclerosis appears probable.

In conclusion it seems safe to state that the discovery of the treponema pallidum has already been followed by an increase in our knowledge of the pathology, the diagnosis and even the treatment of syphilis. We know more concerning the pathological histology of the disease than we did and have more exact information as to the way in which the lesions of syphilis are produced. The finding of the specific parasite in smear preparations or sections renders possible a certain diagnosis, certainly an important advance. The early recognition of the luetic nature of a suspected primary lesion and the excision of the latter ought to be of advantage in the eradication of the disease through treatment.

Ringed Eruptions in Skin Diseases and Their Differential Diagnosis.—Dr. James D. Gold of Bridgeport, in a paper read before the Association of American Physicians on the above subject, (*Medical Record*), stated that ringworm was the disease *par excellence* for ring formations. He considered two forms: ringworm of the general surface, or tinea circinata; and eczema marginatum, or tinea circinata cruris. Both of these were due to a vegetable parasite, tinea trichophytina. Psoriasis and pityriasis rosea were often confused with ringworm; but the large scales of the one and the wrinkled, yellow center of the other marked the difference. He said that the circinate syphilide must also be considered in making the diagnosis of ringeworm. The tubercular syphiloderm was confused with psoriasis and lupus vulgaris but the more general eruption and silvery scales of psoriasis, and the chronicity of true lupus, would generally make the diagnosis clear. Lichen planus and impetigo contagiosa were not infrequently found in rings; yet, even then, their individual characteristics were so marked that no trouble would usually be experienced in making the diagnosis. Erythema multiforme was a more acute and inflammatory disease, and was usually readily recognized. One should study the individual lesion, and compare it with other lesions of the body, to make the diagnosis sure; and, having established that, the treatment could be conducted along the right lines, with comfort for the patient and success for the physician.

Dr. Mark S. Bradley of Hartford, referred to another skin disease prone to occur in ring-like configuration besides those given by Dr. Gold. This was dermatitis herpetiformis, which, in the erythematous type, closely resembled a generalized erythema multiforme. The most striking case of ringed eruption that he had ever seen was in a man with a well-marked case of psoriasis of long standing. The eruption was typical enough, except on the abdomen. The umbilicus was surrounded with a circle, about four inches in diameter, which was solid with the eruption. Around this circle was a ring of healthy skin, about an inch and a half broad; and just external to that was a ring of the eruption, about two inches broad. The abdomen looked like a target in a shooting gallery. The speaker also called attention to the fact that syphilis is the greatest of imitators.

Masturbation in little children is exceedingly difficult of treatment; females contract the habit in infancy, boys as they advance in years. Such children are sallow, hollow-eyed and nervous. They must be watched, and forcible prevention of self-abuse by the hands or by the thighs must be exercised; as children advance in years an unusual amount of firmness and supervision is essential. Bodily punishment avails little, so Jacobi finds; in any event this must not be inflicted upon the genitals, which process is like to be accompanied by pleasurable sensations. The causes of masturbation are local irritation of the genitals in the very youngest, excitation as the child grows older, feather beds, excess of animal food, stimulating beverages, rancid smegma, eruptions on the penis, vaginal and vesical catarrh, renal calculi, preputial adhesions, phimosis, oxyuris and constipation. In the treatment one must remedy such causes as these by cooling diet and coverings, attention to the kidneys, bladder and rectum, relief of external irritation by clothing, removal from the bed on awakening, cold bathing and sponging, mechanical prevention and timely punishment. Nurses should be watched, and discharged immediately upon evidence that they are handling the children. If the infant has acquired the habit, the hands must be tied while it sleeps and it must at all times be watched until it outgrows the habit. Sleeping bags are now to be had for children; a pair of such drawers impervious to the hands can be made.—*New York Medical Times.*

Children's Ward of Presbyterian Hospital New York City.—Bath tubs for the children's ward have been abolished, as they were thought to be one great source of infection. Marble slabs sloping to a sink have been substituted, with sprays for cleansing the skin. When the baby is undressed it is laid on a clean bath towel covering the marble slab, and is sponged off with liquid castile soap on soft gauze and given a thorough spraying. It is then dried with a soft warm towel and dressed in the usual way. Two low chairs, and a low table furnished with the necessary supplies, make it convenient for the nurse to give the eyes, ears and nose a proper cleaning, and the metallic cabinet blanket warmer keeps the clean clothing and diapers at a desirable degree of warmth in the cold season. The towles used during the morning bathing hour are immediately boiled in a small boiler placed at the side of the room and are dried in the drying room on the same floor. This is a saving to the laundry and prevents the mixing of towels. Soiled diapers are placed in large paper bags, and are carried to the rinse house twice daily, where they soak twelve hours in a solution of formaldehyde. Specimens for examination are collected during the night and are kept in a covered agate can. The addition of this dressing room has proved a great luxury for the baby and a wonderful time-saver for the nurse.—*The American Journal of Nursing*, April, 1911.

BOOK REVIEW

A Text-Book of Medicine for Students and Practitioners, by Adolf V. Strumpell, M. D., Professor of Special Pathology and Therapeutics at the University of Leipsic. Fourth American Edition, translated by permission from the seventeenth revised German edition. Edited by Herman E. Vickery, A. B., M. D., Instructor in Clinical Medicine, Harvard University, and Philip Coombs Knapp, A. M., M. D., Physician for Nervous Diseases, Harvard University and Boston City Hospital. Volume 1 with 6 plates, 3 of which are in colors and 224 illustrations in the text. Volume II, with six plates, three of which are in color, and two hundred and twenty-four illustrations in the text. Price, per volume, $6.00, $12.00 per set. D. Appleton and Company, New York and London ,1911.

Heretofore this magnificent work has appeared in one volume, which was rather large and we are pleased to note that it has been divided into two volumes, which will be more convenient in handling. Profesor Strumpell has a reputation among those familiar with German literature, as an author and the seventeenth edition of his large work on the Practice of Medicine will be welcomed by the English speaking members of the medical profession. Since the appearance of the second American Edition in 1893, eleven new editions have appeared in German, which frequent revision has enabled the author to keep the work abreast with the times. The work has been almost wholly rewritten, although it still retains all the merits of the earlier productions.

The contents of volume 1 embrace the following subjects: "Acute General Infectious Diseases," is covered by 27 chapters. "Diseases of the Respiratory Organs" in 5 sub-divisionsisthoroughly and completely described in 38 chapters. "Diseases of the Circulatory Organs" in 3 sections, embracing 14 chapters. "Diseases of the Digestive Organs" in 7 sections and 61 chapters, closing with "Diseases of the Urinary Organs" in 2 sections, embracing 16 chapters. Volume 2 embraces the following subjects: "Diseases of Locomotion" is satisfactorily covered in 7 chapters. The subject of "Constitutional of Diseases" is covered in 14 chapters. "Diseases of the Nervous System" is divided into 5 sub-divisions including 51 chapters. The closing divisions of this section has 12 chapters, devoted to "Neurosis with a known anatomical basis." "Mental Diseases" is a separate division, including 7 chapters.

The following chapters have been inserted in the fourth American edition by the editors: "Fourth Disease," "Malta Fever," "Rocky Mountain Fever" and "Pellagre" It is not usually the custom to include a section on mental diseases in the ordinary text-book on Internal Medicine, but in view of the fact of the great importance of this subject and of the general knowledge of it, the American editors have thought it wise and have added a section on the common forms of mental diseases.

The subject of malaria fever, with all its manifestations is disposed of in a chapter of 11 pages. Perhaps the reason for saying so little about such an important subject is that in Germany the disease usually runs a mild course and gives little annoyance to practitioners. In this country, and especially in the South, we find it a formidable disease to cope with and there they will want a book which goes into the subject of malaria with more thoroughness in detail and treatment. Likewise the subject of Spinal Paralysis in children. (Acute or Chronic Poliomyelitis) is disposed of in a chapter covering about 10 pages. In view of the fact that this disease is of such great importance, we believe that the American editors should have devoted much more space to this subject. During the period from 1880 to 1905 there were over 8,000 cases of this disease reported in the United States and from 1907 to 1910 there were fully 20,000 cases in this country and we believe this book would have been much more valuable had this subject been gone into with more thoroughness and detail. From the critic's point of view, these are the only faults that we find with the work.

In this revision, the editors have made an effort to place the work upon a level with contemporary medical thought and knowledge. Large portions of the subjects mentioned have been wholly rewritten, in particular the whole chapter on "Gastro-Intestinal Diseases" and several chapters in other sections. Sections of the work not wholly rewritten have received numerous changes, so that the whole volume has been completely and thoroughly revised and brought up-to-date.

We are pleased to commend this most excellent text-book on the practice of medicine to our readers. It is all that it claims to be and really deserves a kind reception at the hands of practitioners and students. The orthography and terminology is that adopted by the best publishers, and as a text-book on medicine, we know of none better in the English language. The typography and illustrations leave nothing to be desired. The Appelton's turn it from their presses with all the art in book-making for which they are justly famous.

The Care of the Baby, by J. P. Crozer Griffith, M. D., Clinical Professor of Diseases of Children in the University of Pennsylvania. Fifth revised edition. 12mo of 455 pages, illustrated. Cloth, $1.50 net. W. B. Saunders Company, Philadelphia and London, 1911.

The fact that this instructive hand-book has so soon reached the fifth edition speaks for its appreciation by the profession, who recommend it to the mothers, to whom it is a most valuable guide for all information which they may be in need of before and after the baby comes. The first chapter of this work discusses the subject of the hygiene of pregnancy, followed by a chapter on the growth of the mind and body of the infant. The chapter on the baby's diseases has been written particularly for mothers, who, through various circumstances are unable to have a physician constantly within a moment's call. Many valuable truths are found in this chapter, ending with the consideration of the nursing of sick children.

Such illustrations are found in this volume as is thought will aid in making the meaning of the author clear and more explicit. Many valuable receipts are incorporated in this book for the convenience of the mother, such as the employment of baths for various diseased conditions, the preparation of poultices, disinfectants, massage and the like. Also tables showing the proper proportionate doses at different ages. The author has endeavored to make his statements plain and easily understood, while scientifically accurate and in this he has succeeded well. The last edition is thoroughly up-to-date and a physician could not recommend a better book to a prospective mother than Griffith's Care of the Baby.

The Law of Sex Determination and Its Practical Application, by Laura A. Calhoun, (Mrs. E. E. Calhoun). The Eugenics Publishing Company, G. P. O. Box 935, New York, 1910. 250 pp. Price, $1.50 net. Postage 10 cents extra.

The determination of sex has always been a most interesting problem. All sorts of solutions have been offered for it. So far all of them have proved delusory—and indeed most of them were quite unscientific or even trivial. We have reached a stage in experimental biology now where the possibility of a real solution has at last been reached, (so the author claims) and in the present volume she sets forth the results of observations on human beings and experiments on animals which offer a solution to the vexed problem. The solution which she presents is claimed not to be vague and indefinite, nor difficult of practical application, but clear, precise, accurate, easily applied.

Besides the central problem, the book discusses most of the biological interest in the matter of sex as they have been illuminated by modern biology. The question of the influence of the previous male expressed by the long Greek term telogony— George Eliot once said we map out our ignorance in long Greek names—finds its place properly in the volume. A new phase of sexual influence not hitherto discussed is the influence of the previous female on the succeeding progeny of the male. For this the term telegyny has beem suggested. The relative place of the male and female germinal particles in the production of various qualities of the race is discussed, and there is scarcely any feature of sex in modern biological advance that has not some light thrown on it by the discussion.

Golden Rules of Pediatrics, by John Zahorsky, A. B., M. D., Clinical Professor of Pediatrics, Washington University Medical Department, St. Louis; Ex-President of the Bethesda Pediatric Society; Attending Physician to the Bethesda Foundlings Home; Member of the American Medical Association and of the St. Louis Academy of Medicine; Author of "Baby Incubators," with an introduction by E. W. Saunders, M. D., Professor of Diseases of Children and Clinical Mid-wifery, Washington University Medical Department. 350 pages, cloth binding, price, $2.50. The C. V. Mosby Medical Book Company, St. Louis, Mo., 1911.

To Hippocrates, the father of medicine, may be given the credit for expressing the essential truths of medical science by aphorismic axioms, and since his day the aphoristic style has been more or less appreciated in enunciating the truths of medicine. Since the modern spirit of investigation and research have been the art of pediatrics depend on so many scientific inquiries, it has become necessary to state essential truths in the most concise form. This, the author has done in this present volume, presenting in the most concise manner his observations and precepts on the science and art of pediatrics, giving practical rules for diagnosis, prognosis, etiology and the essentials of infant feeding and the principles of scientific treatment. Dr. Zahorsky's wide experience and thorough acquaintance with the ills of infancy and childhood, and with the best pediatric literature places him in the position to prepare a book of aphoristic pediatric truths which will serve a useful purpose and we predict that the little work will be well received.

Through the ingenuity of an enterprising dispensing druggist of this city, our attention has been brought to a clever invention which fills a long felt want. It is a sanitary bottle cap, shown in the illustration herewith. "The Sanicap" consists of a disk of celluloid, cup shaped, cut to fit any size prescription or dispensing bottle. The Sanicap has a hole through which the cork is placed before being forced into the bottle and which firmly holds the Sanicap in close juxtaposition to the mouth of the bottle. After the first portion of any liquid (Medicines, Syrups, Oils, Lotions, Etc.,) is poured from a bottle, some of it remains and wets the lips of the bottle and thus becomes a nucleus of an unsanitary mass at the mouth of the bottle.

Any original package, viz: oils, fluid extracts, tinctures, syrups, etc., when opened by a druggist for dispensing purposes and replaced on the shelf, or in the case, is left with moistened lips, ready for the reception of dirt, germs, bacteria and any poison which may find a resting place on the mouth of the bottle. It is in this unsanitary condition, when next used for dispensing purposes, and prescription clerks do not always have a wet towel in their hands or have the time to clean the mouth of the bottle, before pouring out a portion of its contents. Likewise a prescription that has been put up and a part of it used and the balance set away will likewise absorb all the dirt, dust and germs which may be circulating in the air, and the next time a dose is poured from the bottle, any kind of poison that may have settled on the mouth of the bottle will be taken by an unsuspecting patient.

The object of this Sanitary Bottle Cap is to prevent such accumulation of dirt, dust, fly specks and disease germs from settling on the lips of bottles, either in the drug store or in the family's medicine closet and thereby keep the contents in a sanitary condition. Physicians who have the best interest of their clientele at heart will do well to instruct their druggist to dispense prescription bottles with the Sanicap attached to corks. We believe that this little invention, when known to the medical profession will be appreciated and ordered by them. This little Sanitary device is manufactured by the Sanicap Company, 2131 Eighth Ave., New York City.

PEDIATRICS

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EDITORIAL

ANAPHYLAXIS, INFECTION AND IMMUNITY.

As far back as 1902 Richet fathered the term Anaphylaxis to explain certain phenomena which he had observed following the second injection of horse serum in guinea pigs. Edward Kent Armstrong, writing on this subject in *Quarterly Bulletin* with others believes the term to be a misnomer, since an altered power of reaction is probably but a step in the process of immunization against many infectious conditions.

The anaphylactic state, or hypersensitiveness, may be defined as a condition of congenital or acquired hypersusceptibility of an organism to a strange protein, while anaphylaxis, or the anaphylactic reaction, is the pathological process resulting from the more or less rapid combination of this strange protein or antigen with a reaction body formed in the organism undergoing immunization.

The current belief that many infectious processes are to be explained on the basis of anaphylaxis is gradually supplanting the older hypothesis that bacterial endotoxins, as yet never demonstrated, are to be held responsible. This difference in views lies in the belief that bacteria themselves have put few toxic properties, the phenomena of infection result from the reaction between the bacterial protein or antigen and its specific antibody, elaborated by the host, in the presence of complement. This conception readily explains the failure to obtain toxins from so many bacteria. Needless to say, those infections accompanied by the production of true toxins, such as diphtheria and tetanus, do not fall in this class.

Casual inquiry would lead one to suppose that immunity and anaphylaxis were entirely dissimilar conditions, whereas close scrutiny will show them to be rather closely related. On the one hand we have the fact that the artificial injection of bacteria in sublethal doses acts as a protection against a primary toxic virus. On the other hand, the injection of an entirely different and non-toxic albumen body causes such a condition of hypersusceptibility that a second injection may cause sudden death. Nevertheless, immunity and anaphylaxis are really only quantitatively different manifestations of one and the same process, as Wolff-Eisner has hypothetically supposed for some time. In both cases there is foreign albumen in the organism, in the one artificially introduced, in the other the result of a natural infection. That the strange protein is, in one case, inanimate, in the other present as a living organism capable of growth, is immaterial in principle.

The difference in phenomena rests entirely upon quantitative relations. Even though the amounts of albumen necessary to produce anaphylaxis are relatively small, we have nevertheless, under the extreme limitations of laboratory experiments, observed the sudden introduction of amounts of albumen which never occur in a natural infection at any given site or in the same length of time. In the case of infection the absorption of albumen occurs gradually and the splitting up of the toxin itself goes hand in hand throughout the entire period. In that way small amounts of anaphylatoxin are continually liberated in amounts immeasurably smaller than in anaphylactic experiments.

Friedberger was able to produce continuous, remittent and intermittent fevers by injecting sensitized animals with repeated small doses of foreign protein, and he concludes that anaphylaxis is an acute form of infection and infection in turn a mild form of anaphylaxis. If this supposition is correct then it must be possible to produce anaphylaxis with bacteria and the clinical manifestations of infections with albumen. The latter Friedberger has in part accomplished.

Kent in *Quarterly Bulletin*, with Friedberger, believes that in pneumonia the anatomical findings are located in the lungs because at the site the accumulated antigen splits off the anaphylatoxin, which absorption produces the general symptoms. If this is true the artificial introduction of serum into the lung of a prepared animal should produce a sterile artificial pneumonia. Friedberger and Meta did this by allowing an animal to inhale serum through a spray apparatus. In 24 hours the pathological picture of a pneumonia was present. It is therefore possible to produce the symptoms of any infectious disease in prepared animals through the administration of albumen, depending only upon the dosage, the number of injections, the intervening period and the site of introduction, using the same albumen or antigent in each case. From this one albumen only one toxin can be split off. Therefore one may conclude that the variety of the symptoms is in no way a criterion for the presence of a variety of toxins in the complicated biologic processes which occur in various infectious diseases.

Since bacteria in infections are no more than foreign albumens there is no reason why anaphylaxis produced by bacteria should differ from those produced by the absorption of foreign proteins. It is not necessary to assume specific toxins for these infectious processes and their existence has not been proven, while the differing clinical pictures in various disease do not speak against this assumption.

Entirely dissimilar organisms can produce the same clinical picture when similarly localized and behaving alike in growth and other biologic characteristics. Cholera and cholera nostra, differing in etiological factors, may be so nearly alike that diagnosis is only possible through exact bacteriological examination, while pneumonia may be caused by the bacillus of Friedlander as well as by the pneumococcus, with analagous symptoms, but with the site of infection the same. In infectious diseases the toxin is not specific but the manner of formation is.

INFANT MORTALITY.

The enormous death rate among infants and young children, has been, and still is a serious blot on our vaunted civilization.

The great mortality during the first year of life, has for many years, been a subject for discussion in pediatric circles, and the fact that it appears to vary greatly in different countries, while in the same country it only varies slightly, has led investigators to the inference that certain peculiarities in each country, in a measure determine the infant mortality. A more cursory glance at the census statistics of infant mortality proves the dictum "that the occupation of being a baby is extra hazardous;" in fact, it is only when one has passed the ninetieth mile post of life's journey that the death rate is as high as in the first year of life.

The Census Mortality Report for 1908 contains, for the first time, a table of deaths by single years of life (United States Census Report on Mortality; Table 13). It accounts for the years 1900 to 1905 inclusive. This table shows that the great emphasis, always observed to fall on the first quinquennium when deaths are stated by five-year periods, falls with even greater emphasis on the first year when deaths are stated by single years. In the same table the deaths of infants, in the years 1900, 1901 and 1905, are given by single months, and here again we find the emphasis of the first year falling on the first month. American statistics do not permit any finer distinction of time than this, but the need of minuter measurements is now generally recognized, and a few tables are available containing the required data.

The report for the year 1909 sums up the total number of deaths to be (732,538), no less than 196,534, or 26.8 per cent. were of children under five years of age, and 140,057, or 19.1 per cent., were of infants under one year of age The proportion of deaths of children under five years of age of the total number of deaths that occurred in the year is far greater than that of any other five-year period, a fact which does not indicate necessarily that the actual mortality or death rate per 1,000 persons living is higher at that period than at certain other periods, especially at the more advanced ages. A consideration of the deaths at the early years of life, however, is of special importance, not only because of the large number of deaths that occur during these years, but also because of the number of deaths that are entirely preventable, is probably greater proportionally for this period than for any other period of life, and the causes which produce them are not being successfully combated. Great progress has been made in the reduction of infant mortality in England and other countries during recent years, and an organization, known as the American Association for the Study and Prevention of Infant Mortality was organized in Baltimore three years ago for the purpose of co-ordinating all of the sanitary agencies available with a view of reducing the number of preventable deaths of infants. It is extremely desirable that for such an important purpose reliable statistics of infant mortality should be available for the entire registration area, and as soon as possible for the entire United States, with which the registration area for deaths will ultimately be coterminous. The correct statement of infant mortality, which term used technically denotes the number of deaths of infants near one year of age per 1,000 living births, depends on the accurate registration of births, which is scarcely to be found in the United States.

A calf as soon as born can stand and run, and in a short time has no need of the food which is furnished from its own mother, while an infant is born helpless, and needs care and maternal food for a long time. The stomach of the cow comprises 70 per cent. of the whole digestive tract, while the human stomach comprises only 20 per cent. of the same (H. D. Chapin). The infant's stomach does not form a depot. It is adapted to receive only a small quantity; the food, therefore, should be of easy digestion, and leave the stomach in a short time. The capacity of the stomach of an infant the first month is 90 gms. (three ounces), and enlarges only three-quarters or half of an ounce every month until one year of age. If we take the capacity of an infant stomach in weight, it is 1-60 to the entire body at birth, 1-40 at the end of the first month, 1-33 at the end of a year, 1-23 in an adult, (Biedert).

Dr. Josephine Milligan, writing on this subject in *Illinois Medical Journal* avers that during the past fifty years the general death rate has markedly decreased, except for babies under a year. In studying the statistics by decades there has been a lessening in the infant mortality rate in the last decade. In the United States this is probably more apparent than real for the registration of deaths has always been more accurate than the registration of births. All registration is becoming much more accurate than formerly, though we are still far behind Great Britain and other European countries in this respect. Phelps gives the average death rate for babies under one year for the civilized world as thirteen out of every hundred. This estimate is made for the broadest average and is meant to be under the truth rather than over it. These figures in themselves are sufficiently appalling and when one reflects that there are quite a number that barely get over the infant dead line, to increase the mortality figures of childhood or to grow up weaklings, the urgency of action on the part of all of us is plain.

THE CAUSE OF INFANT MORTALITY—POVERTY, IGNORANCE AND NEGLECT.

Infant mortality is one of the greatest problems of the age and one which has been much neglected by physicians and philanthropists in the past, but who are now awakening to a realization of the importance of the subject. Educators are beginning to realize that pediatrics should be taught in the medical schools with a great deal of dignity and with the same degree of care and skill as any other subject. Infant mortality is not only a medical but a sociological question. As social causes are responsible for the frightful waste of life, statistics gathered by the United States Census show that 20 per cent. of all children born perish during the first year of life. One-third of the total number succumb during the first month. One-half before the end of the third month, and the younger the child, the greater the mortality rate. In this country 300,000 infants die every year. It is estimated that 50 per cent. pass over the great divide before the end of the fifth year of life.

In the United States there are 140,000 practising physicians, one doctor to every 642 persons. It does seem that with such an army of trained intellectual medical men, guided by humanitarian principles, there could be carried on such a campaign of education that the public would soon be made to understand the importance of rigid sanitary precautions, care and preparation of food, pure water, fresh air and the general sanitary surroundings of the child. It is gratifying to know that in the larger cities the school child is receiving some attention, not only to the physical needs, but also to their intellectual powers and defects, but what is most needed in this campaign against infant mortality is to educate the mothers in the vital necessity for breast feeding and the father in the great need of providing a suitable home and creating an environment for the mother so that she may do her full duty to the infant.

In the United States the causes of the highest percentage of deaths are under three heads. The diseases of the digestive system come first (premature birth—seven months—congenital debility and malformation) cause 23.9 per cent. and diseases of the respiratory system cause 16.5 per cent., *i. e.*, the gastro-intestinal diseases control the curve of the infant mortality.

In New York City in 1909 the annual infant mortality was 130 to 1,000, but for June, July and August it was 169 to 1,000, showing the effect of heat on the mortality curve.

In England, Germany and Switzerland laws exist prohibiting the employment of women for a certain number of weeks after confinement. Poor food, including cheap, dirty and improper kinds of food are potent factors in the gastro-intestinal diseases of infancy. As the average baby consumes about 500 quarts of milk in the first year of life, a study of infant food is chiefly a study of milk. The authorities state that a good milk, either maternal or from the cow, is the largest material factor in lessening infant mortality.

Figures show a great conservation of life due to breast feeding. Munich and New York City give practically the same statistics, *i. e.*, of the artificially fed babies 85 per cent. die; of the breast fed, 15 per cent. die. Tyson gives the following results from a study of 150,000 infantile deaths: Seventy-five per cent. were among the artificially fed. All over the world the breast fed child shows a lower mortality rate. The mammary glands should develop at the age of puberty and every care should be taken to see that their growth is not retarded by overwork, overstudy or improper dressing.

It is hardly necessary to go into more statistical detail to prove that the infant mortality is horrible. The chief cause for this unnecessary waste must be studied. Dr. Holt says, the underlying causes are poverty, ignorance and neglect. If one thinks of the babies born under favorable conditions, it is plain that such children have at least a fair chance to cross the dangerous first year of life. The children whose mothers must work before and early after delivery have a high death rate as is shown by the infant mortality of the mill towns in New England that give the highest rate in the United States census, and much higher than the rate in the mining towns where very generally the women are not employed out of their own homes. In this country there is no organized effort to try to help mothers. In France there are two societies whose object it is to find employment at home for expectant and nursing mothers and two societies whose object it is to teach the necessity of breast feeding to expectant mothers.

THE DISINFECTING PROPERTIES OF DISINFECTANTS.

Children are, of course, peculiarly subject to infectious diseases, as certain of the infectious maladies are especially diseases of childhood. For instance, perhaps the majority of persons before reaching adult age have had scarlet fever and diphtheria and both more frequently attack children than grown up individuals. Consequently, the question of disinfection is one that intimately concerns children. At the present time, there is considerable difference of opinion among medical practitioners with regard to the value of after disinfection, that is the disinfection of rooms which have been occupied by patients or clothing or of other articles which have been in contact with persons who have suffered from a communicable disease. There are those who hold that such disinfection is unnecessary, because in their opinion when an individual who has been suffering from an infectious complaint is dead or has recovered, the pathogenic organisms which caused the disease speedily die after leaving the body. However, the majority of medical practitioners still have faith in disinfection as a means for preventing the spread of disease and in cases of scarlet fever, it would be careless, almost criminal to disregard the safety of the community which impelled a health authority to neglect after disinfection. In fact, until it has been conclusively proven that after disinfection is useless, the method should be employed in all cases in which infectious disease has been present.

It may be laid down as an axiom that disinfection should be employed both during the course of an infectious disease and afterwards. Taking it for granted that disinfection is a measure indispensable to the prevention of infectious maladies, the question arises as to the efficacy of the disinfectant used. There are a large number of commercial disinfectants sold in this country, but the public has no guarantee that they will fulfill the object, which their makers and venders claim they will fulfill. The properties required of a disinfectant employed to prevent the spread of disease are germicidal, to destroy the pathogenic organisms with which it comes into contact, and unless it can do this, its employment is worse than useless. Therefore, there should be some means to guarantee to the public, to some extent, the germicidal properties of the disinfectants on the market.

In Great Britain and in other parts of Europe such means exist. With regard to liquid disinfectants there are now several well recognized tests for the standardization of disinfectants. The first is that devised in 1903 by Dr. Rideal and Mr. Ainslie-Walker and known as the Rideal-Walker or drop method. The standard for comparison is a solution of pure phenol, the organism to be destroyed in a 24 hours culture in broth of bacillus typhosus and the durations of contact of the various dilutions of the disinfectants tested with the test organism are arranged on a uniform plan. The temperature for each experiment is 59 degrees F. to 64 degrees F. The result obtained by the test shows for each substance a phenol or carbolic acid co-efficient, which is a number indicating its germicidal value as compared with phenol under all the conditions of the experiment. This test has been modified in many ways by a commission working for the London *Lancet* on the standardization of disinfectants. (*Lancet*, Nov. 20, 1909.)

The test organism used was a broth culture of the bacillus col. communis. The phenol or carbolic acid co-efficients obtained by the *Lancet* commission are therefore not the same thing as the co-efficient obtained by the Rideal-Walker method and are, as a rule, much smaller values. Another test is that employed by Dr. Martin and Miss Chick at the Lister Institute, London. The temperature of medication is 68 degrees F. and an interval of 15 minutes is allowed for the disinfectant to act on the test organism. The germicidal value of the disinfectant is not determined upon the naked organism in broth culture, as in the two preceding tests, but an emulsion is made containing three per cent. of human feces, dried at 216 degrees F. and subsequently sterilized by steam at 248 degrees F. to which the test organism, bacillus typhosus is added. The phenol or carbolic acid co-efficients obtained are very much less than those of the two previous methods which shows how the germicidal properties of disinfectants are reduced when the test organism is in the presence of organic matter of the nature of feces. Other methods in vogue are the "thread" introduced by Kock in 1881 and the "garnet" introduced by Koenig and Paul in 1897. According to an editorial on the subject of disinfectants which appeared in the *Journal of the American Medical Association*, on July 15, 1911, the best method of all is one presented recently by J. F. Anderson and J. B. McClintie, of the Hygienic Laboratory of the Public Health and Marine Hospital Service. It may be said that the Rideal-Walker method has been officially adopted by the British Army Departments and by a large number of sanitary bodies in Europe and in Great Britain. The great good that the introduction of the drop method as effected in Great Britain, is that it has raised the standard of disinfectants and that by its employment in Great Britain and in parts of Europe a large number of inefficient disinfectants have been shown up and eliminated. In short, the general adoption of the drop method has served as a guarantee, to some extent, to the public that the commercial disinfectant is efficient. In this country there is no similar guarantee and the editorial in the *Journal of the American Medical Association* referred to above, recommends that the council on pharmacy and chemistry of the association should take up this work seeking the co-operation of the United States Public Health and Marine Hospital Service and of other interested bodies. If it were done, another step forward will have been taken in the interest of public health, and especially of public health relating to children.

PEDIATRICS

ORIGINAL ARTICLES

THE STATISTICS OF INFANTILE PARALYSIS

BY
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As little was known regarding the mortality statistics of infantile paralysis, and still less respecting the morbidity of the disease, the Commission of Conservation sent out in November last a circular letter of inquiry with blank return forms to the physicians of Canada. Of the eight thousand letters sent out, replies were received from 316 medical practitioners and in this manner the histories of 658 cases were reported as occurring between November 1st, 1909, and October 31st, 1910. These cases are divided by provinces in the following manner:

Dominion of Canada	658
Ontario	354
Quebec	187
British Columbia	48
Alberta	27
Manitoba	17
New Brunswick	12
Saskatchewan	6
Nova Scotia	6
Prince Edward Island	1

As to sex incidence, of 528 cases when stated, 293 were males and 235 females.

Of the total number where age was stated (554) only 23 were under the age of one year, the remaining 531 being grouped as follows:

Table of Cases by Ages

Age		Males	Females	Sex not stated	Total
2	months	1	1	–	2
3	“	1	–	1	2
6	“	2	–	–	2
7	“	–	3	–	3
8	“	3	–	–	3
9	“	1	–	–	1
10	“	2	3	1	6
11	“	2	–	–	2
12	“	2	–	–	2
1	year	26	34	9	69
2	“	58	38	9	105
3	“	34	32	–	66
4	“	31	29	2	62
5	“	25	12	2	39
6	“	16	17	1	34
7	“	6	6	–	12
8	“	15	9	–	24
9	“	5	5	–	10
10	“	6	6	–	12
11	“	4	6	–	10
12	“	3	7	–	10
13	“	1	4	–	5
14	“	2	1	–	3
15	“	3	3	–	6
16	“	3	2	–	5
17	“	4	1	–	5
18	“	1	–	–	1
19	“	3	3	–	6
20	“	3	–	1	4
21	“	3	1	–	4
22	“	3	1	–	4
23	“	4	2	–	6
24	“	1	1	–	2
25	“	1	2	–	3
26	“	2	–	–	2
27	“	3	1	–	4
28	“	1	–	–	1
29	“	–	1	–	1

Age	Males	Females	Sex not stated	Total
30 "	1	1	–	2
32 "	2	1	–	3
36 "	3	–	–	3
40 "	1	–	–	1
43 "	2	–	–	2
47 "	1	–	–	1
50 "	–	1	–	1
60 "	1	1	–	2
65 "	1	–	–	1

Of these, 341, or 64 per cent. were between the ages of one and five years.

A comparison is made in Table No. 1 of the cases in age group, showing the incidence in three outbreaks or epidemics, Canada, Boston, and New York

Table No. 1
Cases By Age Periods

November 1st, 1909 to October 31st, 1910

	Canada	Boston	New York
From birth to 12 months inclusive	23	44	62
1 year old	69	93	221
2 years "	105	121	180
3 " "	66	90	106
4 " "	62	60	63
5 " "	39	32	28
6 to 10 years inclusive	92	98	47
11 to 20 years inclusive	55	46	19
21 to 30 years inclusive	29	21	2
31 to 65 years inclusive	14	10	1
	658	628	752

The difference in the incidence of the age groups is striking. Under the age of twelve months the disease occurred in from seven to eight per cent. of the cases in the Boston and New York epidemics, as against only four per cent. in Canada.

In the New York epidemic, 90 per cent. of the cases were under five years of age, 71 per cent. in Boston, and only 65 per cent. in Canada; while of those over 20 years of age, there were

43 cases in Canada as against 31 in Boston and only three in New York. It will be noted that in the New York outbreak over 99 per cent. of the cases were under 20 years of age.

Regarding the seasonal occurrence of the disease, it is quite evident we are never without it in Canada, the month of maximum frequency being August, while 76 per cent of the cases occurred in the months of August, September and October. The figures by months are:

January	6	July	72
February	2	August	217
March	4	September	129
April	3	October	111
May	6	November	21
June	18	December	10

(Not stated, 59.)

By a glance at the foregoing it can readily be understood the weather conditions are varied, the returns indicating these being as follows:

Cold and dry	4	Wet	25
Wet and cold	9	Dry and dusty	279
Snow on ground	22	Nothing unusual noticed	88

Weather conditions not stated, 188

196	physicians	reported	1	case	each
56	"	"	2	cases	"
39	"	"	3	"	"
10	"	"	4	"	"
3	"	"	5	"	"
3	"	"	6	"	"
1	physician	"	7	"	"
3	physicians	"	8	"	"
2	"	"	10	"	"
1	physician	"	16	"	"
1	"	"	20	"	"
1	"	"	73	"	"

There were two places reporting an unusually large number of cases where the disease assumed epidemic form, viz: Hamilton, Ontario and North Hatley, Quebec. An outbreak of twenty cases was reported from West Shefford and another of sixteen cases from North Wakefield, both in the province of Quebec; while ten cases were reported from the vicinity of Melita in the province of Manitoba.

As to the mortality of the disease, there were 46 deaths among the 658 reported cases, which is equal to seven per cent. The ages and numbers were as follows: 1, three months; 1 seven months; 1, twelve months; 3, two years; 5, three years; 5, four years; 3, five years; 3, six years; 1, seven years; 2, eight years; 1, ten years; 1, eleven years; 1, fifteen years; 1, seventeen years; 1, nineteen years; 1, twenty-one years; 3, twenty-three years; 1, twenty-four years; 2, twenty-five years; 1 each at twenty-six, thirty-six, fourty-seven and fifty years of age.

But a very brief outline of the statistics of the disease, as obtained by the Commission of Conservation, has here been given. It is the intention to publish in the form of a bulletin a collection of the interesting information so kindly sent in by members of the profession, along with the latest information to be obtained from the several leading Canadian authorities, coupled with information kindly furnished by Dr. Simon Flexner, and others.

Sufficient has been given to show that the inquiry instituted was fully justified. That the disease is with us, we are assured, and of its fatal and maiming effects, we have every evidence. Its prevention is something to be earnestly worked for.

THE PHYSIOLOGIC AND LEGAL STATUS OF THE FETUS IN UTERO.*

BY

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The two most important events connected with a life-history are its beginning and ending.

Embryology has persistently sought to discover and to interpret the earliest manifestations of the former, while pathology, with equal tenacity of purpose, has endeavored to ascertain the causes and incidents of the latter. So far as the beginning of a life-cycle is concerned, embryology has thoroughly established the doctrines of gamogenesis and agamogenesis, the former being the rule among the higher orders of plants and animals, the latter among the lower orders. Reproduction among human beings must, therefore, obey the law of gamogenesis; hence, two ancestors—male and female—contribute to the origin of every new member of the human race, the contributing elements being spermatozoon and ovum, respectively.

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*Read before the Medical Association of the State of Alabama, at its meeting held April 18-21, 1911.

While these germ-cells possess inherent vitality and motor power, especially the spermatozoon, neither one can separately and alone evolve itself into a higher or more complex morphologic entity. Put the two together, however, under favorable conditions, and a new unit results, one capable, under proper environments, of evolving itself into a fully-developed human being, that is, the new unit represents all of the potentialities of which the future adult becomes the outward and visible expression.

In contributing the germs they respectively furnish, the male and female have done all they can do toward the creation of the new unit and toward its endowment with physiologic and psychologic functions similar to their own. From that time forth the new being, possessing all of the attributes of living bioplasm—motion, absorption, sensation, and fission, or multiplication—must be the architect and builder of its own body. True, for nine months the female performs the essential and hospitable function of hostess, and generously supplies the young, and presumably welcome, guest with oxygen, inhaled through her own lungs; with food, elaborated in her own digestive system, and with warmth supplied by her own blood, but in fulfilling these high functions she is simply furnishing the material, the brick and mortar, so to speak, out of which the young builder must erect its own corporeal superstructure.

In the work going on, the part played by the female corresponds with the office of brick and mortar carrier, that by the young builder, with the office of skilled artisan, who takes hold of the materials brought and puts them together in the shape and form of a human body. The new being as it grows and develops is not the passive result of work done by the physiologic forces of the female, but is an autochthon, using, however, very refined material furnished by the hostess. The principle is precisely the same as one that prevails in social life. A hostess places dishes, delicious and wholesome, before her guests, but is powerless to force them to partake thereof; they must, by their own volition, take hold of and appropriate the food brought within their reach.

Science does not forbid, on the contrary justifies the belief that, could the fertilized ovum, before it has formed attachments to the womb in which it receives its fertilization, be transferred without violence to another womb in a similar condition to the first, its career of growth and development might proceed undisturbed. Indeed, could the transfer be made to an artificial womb, or incubator, in which the conditions were identical with those of the natural womb, its growth and development might still proceed undisturbed. The conjunction of spermatozoon and ovum must, therefore, be a great biologic event, one that endows the newly-formed unit with physiologic functions and pyschologic attributes; indeed, makes it, in a qualified sense an independent human being. Although the powers of this new being are feeble, its potentialities are great, the evolvement of which constitutes the growth, development, and achievements of its life-history.

The cardinal postulate I desire to emphasize is that the vitality, the life-force, and the physiologic functions of the new being reside within itself and not in the hostess. As has been said, the latter sends blood to the fetus, freighted with food and air, but she is powerless to force it to accept either; the new being eats because it is hungry and breaths because it feels the need of oxygen, both acts being vital efforts of its own. Soon after receiving its endowment of physiologic functions the new-comer settles down in its velvety and temporary home, prepared by the proliferating lining of the maternal womb, and dominated by an instinct, yea, an intelligence, coeval with its own corporeal origin, proceeds to differentiate itself into bone, sinew, tendon, muscle, blood vessels, viscera, brain, and nerve, and with the skill of a consummate artist fashions these in miniature of an adult human being, the highest type of animal life. The fetus performs these physiologic functions by virtue of its own vitality and power, originally derived, it is true, from the two parental germs, but when these have been consolidated into a new unit—a tertium quid—a self-acting and, in a qualified sense, a self-sustaining human being has been created.

At the end of nine months the silent and unseen artist has filled his temporary home with his living self, whereon the hostess by means of forces marvelously scientific and practical ushers him into the outside world as a plump and rosy baby. When was that baby born, a few minutes ago or nine months ago? Science and logic give one and the same answer. If birth means the act of coming into life, as the dictionaries tell us, unquestionably the baby under discussion came into life nine months ago, and at the end of that period simply changed its domicile. Why not, then, abolish the term conception, which is liable to be more or less misleading and confusing, especially to the lay mind, and substitute for it the more scientific and correct term, birth? This done, then, the one term, delivery, either premature, or at full term, would adequately express the transition of the child from intrauterine to extrauterine life. Besides, the adoption of this nomenclature would help to clarify the entire subject of fetal life and would lead to the enunciation of definite, inflexible, and absolutely correct principles of jurisprudence applying thereto. If the baby in question is a living human being when delivered, was it not a living human being the day before, the month before, six months before, eight months and twenty-seven days before? Can a point of time betwixt conjunction of the parental cells and the delivery of the child be fixed before which it did not possess the nature of a human being and after which it did possess the nature of a human being? Did its nature undergo any change between the time at which conjunction of the male and female germs occurred and that at which the baby appeared in the outside world? Was not the nature of the baby the same from the beginning to the ending of its uterine life? Was it not from first to last simply a question of the growth and development of one and the same being, and after the completion of the period of uterine life will it not continue to be a question of the growth and development of one and the same being up to physical maturity?

With these questions answered in the affirmative, as they must be, we are forced to concede that when in the red-hot furnace of virility two germs—male and female—are brought together that fuse themselves into one, a new being, crowned with humanity and mentality, comes into life. If this be true, does not the new being, from the first day of its uterine life, acquire a legal and moral status that entitles it to the same protection as that guaranteed to human beings in extra-uterine life? Indeed, should it not receive greater protection for the reason that to the nature of a human being it adds the condition of utter helplessness, a condition that should appeal in mute, but sublime eloquence to the manhood, the womanhood, and, above all, to the motherhood, of those who can shield and protect it? Lives there a man or woman who would assault and slay a little, laughing, prattling babe? If that be a crime from which the coldest-blooded villain would recoil, how much more a crime to assault and slay an innocent babe quietly sleeping in what should be an impregnable fortress—a babe whose voice is hushed and cannot be raised in piteous cry for mercy or for help!

Objection to the use of the terms, birth and delivery, in the senses suggested, might be raised on several grounds: First, that it would involve the date of every birth in more or less uncertainty; secondly, that the fact of a birth could not be certainly known for four or five months after it had occurred; thirdly, that no practical benefit would result from the adoption of the proposed nomenclature. Admit that these objections are entitled to more or less weight, yet, when compared with the advantages that would accrue from the change of nomenclature proposed, the objections dwindle into insignificance. A simple formulation of the advantages will be sufficient to force conviction of the utility of the proposed nomenclature:

1. It would be essentially and scientifically correct to locate birth where and when it actually occurs, in spite of the fact that several months would usually elapse before it could be known that a birth had certainly taken place.

2. It would place a pregnancy, from the first day of its probable occurrence to its termination, on the high legal and moral grounds it deserves to occupy.

3. It would dignify the position of the *fetus in utero*, and would establish beyond all doubt or confusion the right of the fetus to the same protection, moral and legal, as is accorded to human beings who have completed the period of their uterine existences.

4. It would unify the terms, fluxion, abortion, and miscarriage, under the one term, premature delivery; then, two expressions, premature delivery and delivery at full term, would cover the entire subject.

5. It would enable lawmakers to enact clear and definite laws for the protection of the *fetus in utero*, which laws, jurists and juries could administer without doubt or confusion.

6. It would have a strong tendency to promote virtue and to prevent crime, and to build up in every community a positive demand for the protection of human life at its tenderest and most helpless period; it would tend to educate the people on a subject in reference to which they stand in great need of education and

would thereby save the lives of many innocent and undelivered babes.

If the argument thus far be sound and tenable, does not the legal status of the fetus become clear and fixed? It is not strange that before science had ascertained the steps and stages of reproduction the law providing for the protection of the fetus should have been inadequate, but after these steps and stages became definitely established no inadequacy on this point should have prevailed. The common law is conspicuously defective in its provisions for the protection of the fetus. The following quotations on this point are made from the American and English Encyclopedia of law: "According to some authorities, it never was an act punishable at common law to commit abortion with the consent of the mother, provided it was done before the child became quick; but others are not disposed thus to restrict the criminal act, and hold that it may be committed at any stage of pregnancy. If the abortion was committed after quickening, it was punishable only as a misdemeanor. If done without the woman's consent, the act was held to constitute an aggravated assault."

Inasmuch as the common law was wholly inadequate for the protection of the fetus it became imperative that this defect should be supplied by statute law. Quoting from the same authority cited above, it is gratifying to find the following statement: "The statutes enacted on this subject in most of the states fail to draw any distinction between the commission of the offense, or attempt at commission, before and after the quickening of the child in the womb, making it a felony in either case. But some states still retain the distinction, punishing the act or attempt more severely when done after quickening. In Michigan it is essential that the child be quickened. The means denounced by the various statutes are the unlawful or malicious supplying or administering to a pregnant woman, or causing or procuring to be taken by her, any drug, poison, substance or noxious thing, or unlawfully using or causing to be used any instrument or other method whatsoever, with intent to procure or cause an abortion."

The statutes on this subject recognize the right of a physician to produce an abortion in the interest of the mother. The question arises: Should this right be exercised? Without undertaking to discuss the various conditions under which the exercise of this right might be considered, the broad proposition is laid down that the occasions on which it would become imperative to sacrifice the life of the child to save that of the mother are extremely rare. With the two great resources of rectal alimentation and Cesarean section at command, it is believed that practically every pregnancy can be safely carried to a point at which the life of the child may be saved. The methods and means of maintaining nutrition by rectal alimentation have been so perfected that the production of abortion, or of premature delivery, for gravid nausea should rarely or never be required. At all events, by this resource the woman ought to be carried to the point of certain viability of the child before premature delivery is resorted to. For deformed pelvis surgery, with its tremendous advances in skill and technic, offers in Cesarean section a resource for saving the life of the child, and at the same time of jeopardizing to such a small degree that of the mother, that it should be universally employed in such cases. Dr. L. L. Hill, a surgeon of distinction in my state, and fully informed on these questions, furnished me recently the following statistics applying to Cesarean section: "1. Zweifel performed 76 Cesarean sections with one death. J. Whitridge Williams, professor of obstetrics in the Johns Hopkins University, 1903.) 2. In 1903 J. Whitridge Williams collected the reports of 335 cases of Cesarean section by various operators, with a mortality of 6.87 per cent. 3. Not a single death of a mother occurred in 11 Cesarean sections recently performed at John Hopkins Hospital. 4. The mortality in Cesarean section should be about the same as that resulting from operations for simple ovarian tumor."

Without pursuing this discussion further, I submit to this Association the following propositions, and invite an expression of judgment thereon, not only by the individual members, but by the body:

1. The conjunction of male and female germs constitutes, from a scientific standpoint, birth.

2. The term conception should be abolished and that of birth substituted therefor.

3. In dealing with all stages of pregnancy, even the earliest, physicians should realize the extreme gravity of the condition, and should never condemn to death a fetus, however young, without the maturest consideration, and without calling

to their aid the highest professional authority within reach; in a word, without carrying the case to the nearest and wisest medical supreme court accessible.

4. The principles herein contended for should be impressed on the members of the profession, taught to medical students and promulgated widely among the people.

5. Medical men should interest themselves to see that the statutes of their respective states are ample for the protection of the *fetus in utero.*

THE REDUCTION OF INFANT MORTALITY.*

BY

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The State of North Carolina, through its Board of Health, has made no mean record along the line of preventive medicine and consequently has reduced the total death rate very preceptibly. The diseases we have all dreaded most, viz: Typhoid fever, small pox, diphtheria, tuberculosis, malaria, etc., have all been materially lessened. The dread epidemics of typhoid fever and diphtheria, of a decade ago have become well nigh impossible through the means now employed for their prevention.

But the question of the infant and what can be done to prolong its life into childhood has been given but passing notice. Practically the whole effort has been directed toward saving the lives of adults and of children after they have passed from infancy to childhood. We seem to have forgotten that unless the child lives through its infancy it cannot reap the benefits from the energy and money we are devoting to preventive medicine.

The total death rate in North Carolina in 1910 was 16.7 per cent., of these deaths about one-fourth were infants of one year and under. A study of the death rate of infants born last year in the United States shows that one-fifth of them died before the end of the first year. In addition to this there were a large number of still births and premature births. Most of the deaths were the result of gastro-intestinal diseases; next in number were those from pneumonia; following these in point of percentage were those from the infectious diseases and tuberculosis. The fact that a large percentage of these deaths are preventable can be seen at a glance from the following figures: In New York City from 1880 to 1907 the death rate in children under five years per 1,000 of population was reduced, through the efforts of the Board of Health, from 104 to 53, in Boston from 112 to 43, in Chicago from 95 to 47, in Paris from 115 to 50, in Vienna from 141 to 62. The census of 1900 gave the infant mortality under one year per 1,000 births as follows: New York State, 150.8, New York City, 189.4, Fall River, Mass., 304.7, Mobile, Ala., 344.5, Savannah, Ga., 387.5, Charleston, S. C., 419.5. The reduction in death rate in the cities mentioned in the first table is a direct result of the work being done by the board of health in the respective cities, in furnishing pure milk and better hygienic surroundings for the infants in the congested quarters. The figures in the first table will also show that the present infant mortality rate can be reduced. In New York City since the Board of Health was established in 1866, the death rate in infants under one year has fallen from 10 to 3.8 per 1,000. Children have always pulled hardest on the purse strings as well as the heart strings of the people, as is attested by the number of infant hospitals, orphanages, deaf, dumb and blind asylums the world over. The apparent lack of interest in the problem of infant mortality is entirely due to the fact that the attention of the people has not been called to it. The remedy may be summed up in the one word education.

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*Read before the North Carolina State Medical Society, Charlotte Meeting, June 22, 1911.

This alarming death rate is due to a series of definite causes. First, the slight resisting power of all infants; second, the smaller resisting power of the weaklings; third, the heat of summer and the accompanying food infection; fourth, the ignorance and neglect of nurses and parents. The first cause is constant and cannot be remedied; the second is constant, but much may be done to render this class of children more normal; the third can be remedied only by removal to the mountains or country; the fourth is unnecessary and hence is the one towards which must be directed our main energy. Hence our fight must be made against food infection and the ignorance and neglect of the mothers. This can be accomplished only through some system of education which will enable the infant to receive a pure milk supply, and to keep it pure until the last bit has been taken from the bottle, and to furnish it better hygienic surroundings. The two means most successful in securing a pure milk supply have been milk depots, such as are operated by Nathan Strauss and others, and milk inspection by municipalities. Unfortunately the maintainance of milk depots is too expensive for small cities and towns. We are forced, therefore, to face conditions as we have them and to combat them by such means as are at our disposal.

The infant death rate rises highest in summer because of the high temperature and the added danger of food infection. If it were possible to nurse all babies at the breast for six months, or to feed them pure milk properly prepared the infant death rate would be greatly reduced. But all babies cannot be nursed and all milk is not pure when bought and, equally important, the ignorance and neglect of the mothers in feeding and caring for them makes the problem a serious one. This great increase in summer death rate from food infection is due to the gastro-intestinal diseases from which most children die. In New York City the death rate from acute gastro-intestinal diseases is 28 per cent., from prematurity, marasmus, etc., 25.5 per cent., from acute respiratory diseases, 18.5 per cent.; these three causes making up 72 per cent. of the total infant mortality. These figures do not definitely express the actual death rate from food infection, because many of the deaths reported as marasmus, malnutrition, etc., are really the result of improper food improperly prepared. So it is the bottle fed infant that furnishes the great death rate. In the larger cities of the United States it has been estimated that 20 per cent. of infants are bottle fed and 80 per cent. are breast fed, and during the first year of life 85 per cent. of the bottle fed infants die to 15 per cent. of the breast fed.

Some concerted action on the part of physicians should be made to secure the breast feeding of all infants whose mothers have sufficient breast supply. No social obligation, whatever, nor duty of any sort should deter the mother from keeping her infant at the breast. It rarely happens that a mother's milk disagrees with her infant and we are often too ready to substitute the bottle for the breast when a little perserverance would remove all the difficulties.

As regards those deaths due to marasmus, prematurity, congenital malformations, etc.—any reduction in the death rate from these causes must of necessity be attained by attention to the parents before the infant's birth. Syphilitics should receive appropriate treatment, the afflicted from whatever cause should be gotten into as good physical condition as possible. The poor and ignorant should be instructed in the laws of hygiene and cleanliness so that they might approach their confinement in the best condition. The question of the wage earner and the influence of factory life on the infant death rate is most important in this connection. Here lies another duty for the health board in securing the enactment of the laws necessary for her protection. She should have a period of rest with proper food and attention both before and after her confinement, and should be instructed by some nurse or physician during her puerperium. Some regulation of the marriage laws should be made that would prevent the union of those mates whose offspring might be defective or congenitally deformed. Marriage between the tuberculous or the syphilitic should also be prevented by law. The deaths from respiratory diseases could be reduced by better attention to ventilation and hygienic surroundings, because more of the deaths are the result of the unhygienic surroundings and poor ventilation than the disease itself. Improper ventilation, crowding of too many lives into one small room, poverty and ignorance all furnish their part in turning the scale against the afflicted sufferer.

Next in our list comes the infectious diseases. In the four largest cities in the United States the death rate from the infectious diseases furnishes only 5.8 per cent. of the total. The steps now being taken by our health boards are doing all that can be done at present to limit these diseases.

This brings us to the last and most important factor in the causation of our high infant mortality, viz: The gastro-intestinal diseases. The deaths from this cause according to our table referred to above, comprises 28 per cent. of the total death rate. Since most of these deaths occur in the bottle fed and among those who are careless and ignorant, it must follow that many of them are preventable. In New York last year 16,000 infants died from diseases largely preventable. Any correction of the causes operating in this class must come through some system of education that will give a more wholesome milk supply and teach better hygiene and feeding principles. Instruction must be given the mothers or those who have the infants in charge. In those cities that have had the largest experience in this work, it has been found that the greatest good can be done where the doctors and nurses work together. In those towns that can maintain a milk depot the means of reaching a certain class of mothers is readily at hand. But the difficulty in the way of obtaining the most perfect results from such depots is the fact that only a small percentage of the mothers will patronize them; and the ones who do not patronize them are those who are most in need of instruction. This latter class can be reached only by the visiting nurse and this in my opinion is the most successful plan of campaign. Here too, we are met by a serious difficulty and that is the unreliable vital statistics and the inadequate laws governing birth registration. The nurse can visit only those children whose births have been reported. A great majority of the deaths in this class of patients occur during the first two to four weeks of life and if any real work is to be done for them they must be seen early, before the fatal condition has been established. The laws governing birth registration should be sufficiently stringent to insure the report of every birth in each county. In Guilford County we have a superintendent of health employed for his whole time, and he has had passed a law requiring every doctor in the county to report to him, on blanks prepared for the purpose, the birth of every child, with the name and address of the parents. In Greensboro we have a district nurse, one of whose duties is to visit each mother who has no nurse and give her instructions in the proper care of her infant. We hope by this means to save many children who heretofore have died from the ignorance and carelessness of the mothers. In the large cities where milk depots can be maintained, the mothers who visit the depots are instructed to bring their babies at stated intervals, when they come for their milk supply; at such time the babies are weighed and carefully examined and definite directions are given the mother as to the food and care of each case on its own merits. They are taught the value of cleanliness, ventilations, proper feeding methods, etc. Attention is given not only to the food and its proper preparation, but to the child itself, its clothing, habits, stools, etc. However, it is the family physician who can do most for the success of this work in North Carolina. The district nurse is the greatest asset we have, and every town that can afford to employ one for her full time, should do so. Her work is of far more importance than the average city council knows, and it is our duty to direct their attention to this phase of their duty and never to rest until each town has in its employ a corp of district nurses whose duty it shall be to instruct the people in the principles of hygienic living and proper care of infants. She should be furnished a list of births each day, by the board of health, and should visit each child and mother as often as in her judgment it seems necessary.

In spite of all that we can do in the way of furnishing nurses and milk depots there will still be a great many mothers and babies who will have to be seen only by the family physician, and it must fall to his lot to give his care and attention to the proper management of the child. He must become more than ever the educator of the people, and his work will consist more than ever in teaching people how to keep well and less and less in curing the sick. I believe that the day is not far distant when families will employ their physician by the year to keep them well rather than send for them only in case of sickness.

The question of infant feeding and infant development is really just in its infancy and the medical schools are just awakening to its importance. We can all remember when there was no separate chair of pediatrics in any of the medical schools and when no examination on pediatrics was required for graduation. It is only within recent years that infant feeding has been taught at all and a great many physicians are really lacking in ability to properly feed and care for infants. It is too often left to the discretion of the mother or black mammy to decide what sort of food the child shall take, and in what amounts and how often.

Right here I would like to pay my respects to the house fly and the part it plays in increasing our infant mortality. We know that the gastro-intestinal diseases are in great part caused by food infection, and we also know that the fly brings all kinds of bacteria to the nursing bottle and food of infants. Perhaps the greatest danger comes from the habit of the mother or nurse in removing the diaper from the child, laying it on the floor to be covered by a swarm of flies, that convey the bacteria directly to the nipple of the patient or the food of a healthy child. Often we see a case of simple indigestion suddenly develop an acute infectious diarrhea, and either in the stool or in the intestine at autopsy we find a fly covered with bacteria that are the specific cause of the attack.

The question of infant mortality is a pressing one. It needs our most earnest thought. We know from the experiences of other states that it is capable of solution. I hope to see a system of district nurses in every town in North Carolina, whose duty it shall be to visit every new born infant who is not already in the care of competent nurse or physician. I hope to see milk depots established in every town that can afford them, and I hope to see the nurses and doctors given special instruction in the principles of feeding and caring for infants. Then, and not until then, can we hope to see the infant mortality reduced.

I wish to give credit to Dr. L. Emmett Holt for the figures I have taken from his paper published in the *American Medical Journal*, and to the North Carolina State Board of Health for the mortuary tables sent me.

INTUBATION IN DIPHTHERIA.

BY

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In this paper I will not attempt an orderly description or consideration of the subject, but will discuss some special features of the disease as I have seen them in recent years, especially in the last twelve months, during which time my section of the State has been visited by an epidemic. Many of us can remember when the laryngeal type of this disease was the most fatal of all diseases. An occasional patient was saved by tracheotomy, which however, was rarely permitted, and in those cases where the necessary permission was obtained, the operation was often only a means of "snuffing out the flickering flame of life on account of the operation being too long postponed."

Diphtheria is one of the most important diseases we have to contend with, few diseases are more intricate in regard to diagnosis, all of the acute diseases of the throat in childhood center around it, a large percentage of cases of this disease die if not properly treated, while most of the acute throat troubles of childhood are attended with little or no anxiety.

For these reasons every doctor should have a speaking acquaintance with diphtheria. It is much to be regretted that medical students seldom see the disease before graduation. A doctor who has been in active practice about seven years, told me he had never seen a case of the disease; this doctor's experience is similar to that of many others who say that "they have seen very few cases;" the fact is that they have failed to recognize the large number of mild cases, which go to recovery without giving definite indications of this disease, and these mild cases account for failure to check the spread of the disease when it makes its first appearance in communities, generally in the early winter months, because they are not recognized as such and cannot be isolated.

I believe that isolation with common sense cleanliness and care of nasal discharges are sufficient measures to prevent the spread of diphtheria. In the absence of a bacteriological examination of the convalescent's throat, they should be isolated for three weeks.

Forbear with me while I review some cases of the laryngeal and tracheal type which in my experience have been rare until the last twelve months, during which time I have intubated on an average of one a month, in the section of the State embraced by Union, Spartanburg, Greeneville and Anderson Counties. I suppose others have had equally as large experience, and I am at a loss to account for this form of the disease in such large numbers. I have seen several cases of this type when it did not become necessary to use a tube.

Case 1.—White lad age five. Measles followed on third day by membrane in pharynx, when first seen, his breathing was said to be improving, though he was in a desperate condition on account of poor heart action. Being very nervous and irritable a delay of two hours was decided upon, at the expiration of which time his condition was unimproved, the attending physician and myself feared heart failure would attend the inevitable struggle consequent to intubation, an anaesthetic was out of the question. He was prepared in the sitting posture and with his first attempt at resistance his heart stopped, the tube was quickly introduced but all efforts to resusitate failed. Antitoxin 10,000 units had been administered 18 hours before death.

Case 2.—Male child B., age three. Mother and three small children sick with "sore throat" all doing well except this patient who had had "croup" for 24 hours, and on my arrival was in extremis. Arranged in sitting position, struggled violently, the father failing to hold the child securely, time was lost and before it could be restored to correct position it was dead, tube introduced, efforts at resusitiation failed. None of this family had any anti-toxin. The others recovered.

Case 3.—Infant V., age 11 months, had been well until 12 hours previous to my visit, when it became croupy, its general condition was good, with increasing respiratory difficulty. Jackson's speculum exposed larynx and a thin young membrane was visible in patches on epiglotis and in ventricle of larynx. Intubation performed with infant flat on its back on edge of bed. Ten thousand units, recovery without complications, extubated on sixth day. (One intubation.)

The surroundings were crowded and dirty, with other children in close contact, all received immunizing doses of anti-toxin, except one little girl who was discovered to have pharyngeal diphtheria, she received 5,000 units, recovery.

Case 4.—Infant G., two years, six months, seen at sundown one evening in condition of beginning cyanosis on account of laryngeal obstruction, it had retired on the previous night well, had attack of croup during the night, which had grown worse all day. Laryngeal speculum revealed tender membrane on epiglottis and arytenoids. Intubated in prone position, at 1:00 A. M. while unwatched it disengaged one hand and extubated itself by pulling the thread which was left attached to tube. I was not notified until six hours after and arrived just after death relieved its struggles. This patient had had 10,000 units of anti-toxin.

Case 5.—J. B. W., age five, first seen when in extremis, had been sick with diphtheria one week, intubated in sitting position with difficulty. Reintubated three times during succeeding three weeks, recovery. (Three intubations.)

Case 6.—J. F., age five, after a hurried trip eight miles in country found patient just becoming cyanotic, it had received 3,000 units. Immediate intubation was followed by 10,000 units. Recovery. Extubation at end of one week. (One intubation.)

This child's family attended the funeral of a neighbor's child, which had succumbed to diphtheria and at the funeral the coffin was opened. There were several other children in this home and no other cases of diphtheria appeared. This child lived in a remote country district and may have been infected from contagion at the above mentioned funeral. Two other families in this series in which the disease appeared also lived in the "backwoods," they had no knowledge of a case of diphtheria in the surrounding country, and the family had not been off their farms in several weeks.

Case 7.—Infant D., age 14 months. Received hurried call at day-light and drove 15 miles, arrived at attending physician's home was invited to breakfast, I urged him to go at once with me to see the patient, on arriving I beheld one of the most pathetic sights in all my professional experience. The infant's whole being was concentrated on a struggle for air, no crueler death can be pictured, its lips blue, face ducky, eyes wide open, with the white of the sclerotics intensified, pleading a mute appeal for help or the deliverance of death. Convulsive twitching, and that awful laryngeal stridor, becoming slower and slower. As I reached the bed side the physician said "its too late, he is dead," my reply was, "all he needs is air," and suiting the action to the word the tube was introduced and after seeming "ages" spent in efforts to start up the respiration our efforts were rewarded. This child had had but 3,000 units. It now received 15,000 more. Tube coughed out on the fourth day and not replaced. Recovery.

Case 8.—J. W. R., two and a half years, sick 36 hours, 20 miles drive after midnight, 10,000 units of anti-toxin administered at once followed by intubation, twice in two weeks. Recovery. (Two intubations.)

Case 9.—Infant L., 16 months, sick four days, had received no anti-toxin, 10,000 units on my arrival, was at once administered. Intubated three times in 15 days, recovery, did not inspect for membrane.

Case 10.—W. J. B., 26 months, sick 48 hours, croup progressing for 36 hours, no anti-toxin, membrane in pharynx, 1,000 units given at once, immediate intubation, 10,000 additional units in eight hours, extubated three times during the three succeeding weeks before permanent.

Case 11.—Col. girl, age 13. Ill three days, had received no anti-toxin. In imminent danger from croup, 15,000 injected, acute mania, with almost normal temperature. Intubated, removed tube on eighth day. Recovery. No visible membrane. (One intubation.)

Case 12.—Infant J., 13 months. Sick seven days, with cold in head and croup, not until the seventh day did child cease play and became drowsy, with an increasing difficulty in breathing, temperature 101, intubation, 22,000 units. Removed tube after four days. Reintibation in two hours. Recovery. (Two intubations.) Never any visible membrane in this case.

Case 13.—B. G., three years. Sick three days, subject to croup, present attack continuous for 48 hours, had received no anti-toxin, 15,000 units given immediately followed in eight hours by 10,000 units more. Intubation, three times in three weeks before permanent cure. Acute nephritis with general edema developed in second week. Recovery. Sister age six, was ill, pharyngeal diphtheria type, at same time.

Case 14.—W. A. M., Jr., age two and a half years. Croup was attacked with 14 hours before I saw him, no membrane or redness of pharynx. Intubated. Pneumonia on second day, sixth day lungs fairly clear, temperature normal, extubated. Intubated at end of four hours, the next day a severe bronchopneumonia returned. This pneumonia may have been due to extention of the membrane, septic, or inspiration of foreign particles. (Two intubations.)

Case 15.—Female infant, age 13 months. Under development, 50 miles distant. Membranous croup had existed 26 hours, when I first saw case was in extremis, when I arrived: Intubated three times in three weeks, 20,000 units. Recovery.

Lessons.

From these cases I have learned some lessons from which I hope to profit in the future.

Among them is the fact that there is much less danger to a child and it is infinitelyeasier for the surgeon to intubate when the recumbent position is used, and I think it often advisable to use a sedative before intubation. I prefer morphine and atropine, it eliminates the elements of fear. This is also good practice before extubation as it suppresses the laryngeal reflex, violent coughing is prevented and quiet sleep ensues, during which time the tissues which have been pressed on by the tube regain their tone. While there is no rule as to when to remove the tube, there are certain indications which should guide us. With a temperature running high a rapid weak heart, a progressing or doubtful pulmonary involvement, and membrane, yet in situ, much will be gained by waiting even until the seventh or eighth day. On the other hand, if the constitutional symptoms are subsiding and the mucous membrane of the throat assuming a normal color the tube can be removed as early as the third or fourth day.

In this series of 15 cases only three remained without the tube after the first extubation. The others were reintubated two and three times at intervals averaging a week apart. I believe it is better practice to do the second extubation in two or three days after the first, but most of these cases were distant from the city and could not be seen often, one of them was 50 miles away and I had to make the fourth visit to it. I am often asked how soon it is safe to leave the patient after removing the tube. Again I must answer there is no rule, one has to be guided entirely by the patient's breathing; where the tube has not been a close fitting one, the vessels of the contiguous mucous membrane are not profoundly paralyzed, so that on removal of the tube they regain and maintain their tone in a short time and the calibre of the larynx is not obstructed by swollen membrane. On the other hand, it is hard to judge the conditions in the larynx because it is unwise to tax these little ones with manipulations necessary for an examination, any struggling on their part is apt to precipitate a cardiac paralysis.

I have never had to reintubate after six hours. My experience has shown that the laryngeal type of this disease is less toxic than the other types, but on account of its gravity I recommend larger doses of antitoxin than in the other types, often using 25,000 units in the first twelve hours.

Albuminuria is the most frequent complication. For its control hot N. S. S. per rectum has given me the best results.

A word as to its contagiousness. I have seen many cases of this disease but fail to recall a single case which developed in the same house subsequent to the initial appearance of the disease. I have seen more than one case in the same house, but indications pointed to the same source of contagion, as the cases appeared simultaneously.

This failure to spread is probably accounted for by the ordinary precautions used in the average home, but such measures seem very inadequate when we consider the failure to promptly check the spread of diphtheria under the most careful and strenuous measures. The recent epidemic in Baltimore is an illustration. Perhaps the laryngeal type of diphtheria is less virulent than the other types. There is too great a tendency to stress the importance of the bacteriological diagnosis, the quarantine must be established on clinical evidence and should not be relaxed even if more than one laboratory report should be negative.

If the presence of a foreign body can be excluded, a diagnosis of diphtheria is warranted in any case of croup which has continued without remission for 24 hours. A high percentage of laboratory reports are negative on the first examination, this should not deter us from making a positive clinical diagnosis and proceeding with promptness on such assumption, for more lives will be saved this way, than if we rely overmuch on the laboratory report.

In closing this paper I wish to discuss the use of anti-toxin briefly, it is said to be harmless, but this statement should always be qualified, by adding except in patients subject to asthma, hay fever and urticaria, in these individuals as well as those who have received previous doses of horse serum, the injection of anti-toxin is dangerous; an ordinary dose some times promptly kills this class of patients. I believe that immunizing doses should be used only in crowded institutions. In private families those who have been exposed or are suspected can be watched for the development of the disease, in the early stage of which anti-toxin is just as efficacious.

Always use a concentrated anti-toxin because the serum is probably the dangerous elements and it is desirable to use the smallest amount practical. Be sure not to inject the anti-toxin into a vein.

In primary injections the dose of serum should be given at intervals of six hours, so as to avoid a condition known as anaphylaxis.

If indications for its use again arise, first give a small dose, one to two cc. and if no unfavorable symptoms appear in 30 minutes to one hour, then give it generously at short intervals.

We know very little about anaphylaxis; observation leads to the conclusion that there exists some substance in the circulation of animals which unites with a body contained in horse serum. The substance which results from this union is known as the "reaction body." This body unites with the serum of the second injection and acting as a poison causes a condition called anaphylaxis. After an animal has survived a second or intoxicating dose it is not again sensitive to the injection of this soluble proteid.

It is to be hoped that laboratory investigations will not have an unfavorable influence on the general use of this benificient remedy.

THE THEREPEUTIC UTILITY OF DIPHTHERIA ANTI-TOXIN, WITH REMARKS ON ANAPHYLAXIS AND ON THE FEASIBILITY OF A SCRATCH TEST.*

BY

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Behring's great discovery of diphtheria anti-toxin, which made its practical debut in 1894, has revolutionized the treatment of diphtheritic infection; it has saved many lives and added much to the sum total of human happiness. Statistics show a lowered mortality of at least 50 per cent. in all kinds of cases, mild and severe. The experience of the individual physician is still more convincing than statistical figures. Whereas formerly he had the feeling of helplessness he now feels that the disease is under control if taken in time. Thus after seventeen years of practical experience with this therapeutic agent the civilized world has accepted diphtheria anti-toxin as a true specific, both curative and protecting, but the mortality from diphtheria still remains higher than was predicted by Behring (five per cent.) and higher than it should be if it has the curative power we attribute to it.

To my mind, the principal reason for the present day mortality in diphtheria, not taking into consideration the occasional and unexplained violent epidemics, lies in the fact that we do not sufficiently recognize the great divergence of clinical manifestations of diphtheria and, furthermore, that we have failed thus far to educate the general public along these lines.

Of all acute infections diphtheria and influenza stand first in their great divergence of clinical manifestations, and in order to get the best results and make the best use of a great remedial agent in diphtheria, we as a profession must know all phases of the diphtheria situation and should be willing to spread our knowledge into the public as much as possible.

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*Read at the Annual Meeting of the American Pediatric Society, Lake Mohonk May 31, 1911. Postgraduate.

In this communication I will briefly present my personal viewpoint and experience regarding some of the clinical manifestations of diphtheria as we see them in New York and vicinity.

Anti-Toxin in Tonsillitis and in the Ordinary Forms of Diphtheria.—We need not take up much time discussing the usual forms of diphtheritic localization with which even the layman is familiar. Apart from such cases as show a tendency to relapse after first improving, the primary pharyngeal, tonsillar or laryngeal diphtheria cases show great uniformity in their behavior under repeated doses of from 3,000 to 5,000 anti-toxin units. With good hygienic management and energetic and early specific treatment the mortality is not much over five per cent But, if in the presence of a visible pseudomembrane or exudate we assume the ultra scientific attitude of waiting a day or two for a confirmative laboratory report before administering anti-toxin our mortality will be 12 to 15 per cent., and such indeed are the mortality figures for the State of New York and Pennsylvania in the last few years. The principle of giving the patient the benefit of the doubt is a safe and sane one in diphtheria as it is in syphilis, and, moreover, in the first mentioned acute infection no time is to be lost, and in the event of an unfavorable termination of a bad case we can bow to the inevitable without regret or reproach.

Let me illustrate this point by drawing the attention to the clinical behavior of so-called tonsillitis in our large cities.

If we look into the throat in a case of so-called follicular tonsillitis we see an inflamed large tonsil with white dots (not patches). That according to the text-books is tonsillitis, which should subside in a few days under non-specific management. But what we frequently observe in such cases is, that on the occasion of our second visit and inspection, we find that some of these spots have coalesced to a small patch, and subsequently to a large patch, with all symptoms of diphtheritic sepsis. The experienced practitioner knows that it is often impossible to distinguish clinically between tonsillitis and diphtheria, and that it is unwise to wait for a confirmatory laboratory report before giving anti-toxin. Whenever we observe sore throat in a child with fever and swollen lymph nodes, be the lesion ulcerative or exudative, anti-toxin is promptly indicated. The fear that a family or community will be needlessly alarmed by a call for anti-toxin in cases in which the laboratory report is subsequently negative must not deter us from using this remedy in good time, particularly if we emphasize its prophylactic virtues in doubtful cases. All this is old history, but it emphasizes the fact that the rank and file in our profession do not up to the present time make the best use of diphtheria anti-toxin.

Nasal Catarrh and Primary Nasal Diphtheria.—When the writer first went to school in a little log house on the bank of the Mississippi, in Iowa, in 1861, most every boy and girl had a running nose in the winter. No doubt some had adenoids or other nasal obstruction and occasionally all had so-called "colds," with a thick, whitish discharge from the nostrils frequently associated with a croupy cough. Diphtheria had not penetrated to our region, and running noses subsided in due time.

Now what do we frequently observe at the present day in New York City? A running nose, usually one-sided; a thin blood-colored, greenish discharge; an excoriated upper lip; perhaps a week later a croupy cough is noticed and stridulous breathing, and finally stenotic breathing and cyanosis. During all this time the pharynx is free from pseudomembrane, and pale in appearance. The experienced colleague recognizes the clinical picture of primary nasal diphtheria at an early stage, and extinguishes the smouldering flames with a few doses of anti-toxin. The clinical novice may or may not apply the remedy when it is all but too late, although in primary nasal diphtheria he has ample time to wait for a laboratory report before administering specific treatment.

Anti-Toxin in Scarlet Fever and Measles.—When scarlet fever or measles is complicated by diphtheria from the start, we usually have to deal with a severe double infection which is occasionally fatal in spite of early energetic treatment. In such cases it is extremely unwise to wait for a confirmatory laboratory report, because one or two harmless doses of anti-toxin will assuredly counteract a part of the sepsis and may turn the tide in favor of the patient. In measles with so-called follicular tonsillitis a subsequent laryngeal stenosis is not infrequently observed and should be promptly forestalled by the administration of anti-toxin.

In measles and scarlatina, diphtheria is often a complicating feature after the skin eruption has subsided. Such cases are not as severe as the simultaneous double infection, and here the anti-toxin need not necessarily be administered until throat symptoms are really in evidence.

Anti-Toxin in Some Forms of Broncho-Pneumonia.— It is not generally appreciated that certain forms of broncho-pneumonia and pleuro-pneumonia can be favorably influenced by diphtheria anti-toxin.

An apparent primary diphtheritic broncho-pneumonia is an occasional occurrence in adults as well as in children. The clinical features of this variety of broncho-pneumonia differ somewhat from the simple, the syphilitic, the tuberculous, or the influenzal varieties, inasmuch as an early and persistent subjective and objective dyspnea with pronounced cyanosis are much in evidence. Not infrequently large and shreddy membranes are coughed up, the voice is usually husky, hoarse and croupy. Whenever a primary or secondary diphtheritic broncho-pneumonia is suspected anti-toxin should be administered freely and under circumstances in large doses, at the same time five grain doses of camphor in oil should be given every two hours for a period of one day. This variety of broncho-pneumonia is frequently fatal, but recoveries under specific treatment have been observed and reported.

Anti-Toxin in Whooping Cough and Diphtheria.— Whooping cough may be complicated by a visible throat diphtheria or by membranous croup with a free pharynx. The congested condition of the upper respiratory tract in pertussis favors diphtheritic infection. Therefore, anti-toxin is indicated as soon as the slightest visible throat or nose exudate or membrane is in evidence, and in the event of a croupy cough in pertussis, the prompt administration of anti-toxin is life-saving, inasmuch as it usually makes intubation unnecessary, for it is well known that intubation in children weakened by severe spasmodic cough is usually followed by severe broncho-pneumonia which may end fatally in young children, in spite of the best management. In some cases a careful observer will find the whooping cough blisters (stomatitis) in the mouth of the child covered with a dense pseudomembrane, several days before the croup symptoms are in evidence and will promptly administer anti-toxin in order to limit or overcome the spread of the exudative inflammation.

Anti-Toxin in Stomatitis and Noma.—We all have seen ulcerative stomatitis and noma (gangrene) with extensive destruction of tissue. Such cases impress us clinically as the analagon of phagadenic chancres. It is quite natural, inasmuch as these lesions usually begin somewhere on the buccal surface, that we should look for diphtheria bacilli in these cases, suspecting a mixed infection. But such cases usually run their course with culture findings negative as to diphtheria. Notwithstanding this well-known clinical fact, it is wise to give a few doses of anti-toxin in such cases, first on general principles and because there are cases on record in which improvement set in as soon as diphtheria anti-toxin was administered.

Anti-Toxin in Foul Smelling Sore Throat and Mouth with a Pus-Like Non-Membranous Exudate.—Two cases of this variety of sore throat came under my observation. A girl of 12 first took sick, then her brother of five. The pharyngeal exudate was pus-like, the laboratory report was staphylococci. No diphtheria bacilli. The girl became rapidly anemic and too weak to sit up. Local measures, stimulation and the administration of the tincture of chloride of iron gave no improvement. In the third week 3,000 anti-toxin units were administered every other day, altogether three doses, whereupon rapid improvement was noticed.

The younger child after being ill in the same way for a week, developed croup and progressive stenosis and was well after five doses of anti-toxin, each 3,000 units. Here also a culture was negative as to diphtheria bacilli.

Such cases seem to bear out the contention of those investigators who claim positive therapeutic virtues for diphtheria anti-toxin in certain non-diphtheritic ailments.

Anti-Toxin in Miscellaneous Forms of Diphtheria.—Pseudomembranous conjunctivitis is not, as a rule, diphtheritic but it may be. This is also true of ulcerative and suppurative keratitis. In all positive or doubtful cases anti-toxin is indicated.

Cases of puerperal sepsis with a visible pseudomembrane on the labia or deeper parts should receive one or two injections of anti-toxin without waiting for a laboratory report.

Cases of facial erysipelas following tonsillar diphtheria have been observed and should receive specific treatment.

Diphtheritic enteritis with a passing of large membranes and well defined post-diphtheritic paralysis have been reported.

Wound diphtheria, especially after operation on the nose and throat, is not a rare occurrence.

Adenoid vegetations may also be the primary seat of a diphtheritic process. For bacteriologic examination, the material in such cases must be taken from behind the soft palate or through the nose.

In all these miscellaneous forms of diphtheria, anti-toxin is indicated.

Anaphylaxis. (Hypersusceptibility).—A discussion of the therapeutic utility of diphtheria anti-toxin would be incomplete without a consideration of the biological phenomenon known as anaphylaxis. When albuminous substances are introduced into the circulation other than by the way of the gastro-enteric tract (by subcutaneous, intraperitoneal or intravenous injection) immune bodies are formed in the blood and the individual becomes sensitized for the specific proteid injected and for an indefinite time period but not for any other form of proteid. This process is best illustrated by citing the sugar experiment. If grape sugar is injected into the vein of a guinea pig an immediate decomposition of the injected sugar does not take place. But soon thereafter a grape sugar splitting enzyme is formed in the blood, and a subsequent second injection of grape sugar is immediately reacted upon by this previously formed enzyme. In a similar way if an albuminous substance be injected into the vein of a guinea pig an enzyme is formed and thus a second injection of proteid two weeks after the first will be reacted upon the enzyme and the albuminous substance will be peptonized in the circulation, giving toxic anaphylactic symptoms similar to those observed when a peptone is injected directly into the veins of a non-sensitized guinea pig.

This is known as an albumin peptone reaction, and in anaphylaxis this peptone reaction is specific for a specific variety of albumin and for none other.

If we inject subcutaneously 1–100 cc. of horse serum into a guinea pig and after two weeks one cc. of human serum, no reaction will follow. If thereupon we inject one cc. of horse serum, the animal becomes anaphylactic. Within half a minute it will scratch its nose, its hair will rise, fibrillary twitchings will be observed and the animal becomes comatose. Within two to three minutes severe tonic and clonic convulsions will set in and end in death. When this anaphylactic shock is too weak to kill, the rectal temperature of the animals sinks from 38 to 36 or 30 degrees C. within the next eight to fourteen days, and no specific reaction in cases of recovery will follow a renewed injection of horse serum, (anti-anaphylaxis). This well-known fact has been utilized in practice. Human beings who show extreme sensitiveness to serum anti-toxin have been safely brought under its influence by beginning with minute doses and gradually increasing the dose.

When guinea pigs have succumbed to anaphylactic shock the lungs are found pale and distended. They fill up the entire thoracic cavity and do not collapse, as though under the control of bronchial spasm. The heart pulsates for from five to 40 minutes after apparent death.

These severe toxic anaphylactic phenomena have been observed so far only in guinea pigs. In rabbits, cats, dogs, chickens, human beings, a mild form of anaphylaxis has been reported, but not as yet sufficiently studied.

A Scratch Test.—Primary serum anti-toxin injections in the acute stage of diphtheria in human beings are, as experience has shown, harmless. The degree of sensitiveness to serum administered to a sensitized individual varies, according to the writer's experience, in different individuals. At no time has he observed serious results following the administration of serum to an already sensitized patient. In a limited number of cases in which the writer has injected antitoxin on various occasions and years apart in the same individual, a violent erythematous eruption extending over the entire body was observed, but never a fatal result. As a possible safeguard for individuals previously sensitized by horse serum the writer has used and suggested the use of a scratch test. This test is made in the same way as the Von Pirquet test for tuberculosis. If a minute quantity of serum rubbed into a scratch in the skin should be followed by severe local or systemic reaction, its further introduction into the system in the full therapeutic dose would be contraindicated. Moreover, it would seem important to employ in already sensitized persons an anti-toxin derived from some other animal than the horse, or an anti-toxin disassociated from albumin, if that were possible. The writer's experience with the scratch test is as yet too limited to permit of a statement as to its definite value.

Anti-Toxin as a Prophylactic.—Until the question of anaphylactic shock in human beings is definitely settled, immunizing injections of serum should be resorted to only for the purpose of limiting an epidemic or for protecting exposed individuals who cannot be protected by isolation; or better still, immunizing injections should be made with a serum other than that which comes from the horse. When the immunizing power of diphtheria anti-toxin is invoked, the time lost in first making a bacillary inquiry is not a serious matter.

The induction of an active immunity in the human being by means of repeated injections of minute doses of diphtheria toxin has also been accomplished, but it is too early to discuss the feasibility of this procedure from a clinical viewpoint.

Resume.

The scope of the application of diphtheria anti-toxin may be considerably widened in non-sensitized individuals.

For detecting hypersusceptibility to serum preparations in their parenteral application to sensitized persons, a scratch test is suggested.

In view of anaphylactic phenomena observed and reported the administration of serum preparations to sensitized persons requires further study.

ANAPHYLAXIS IN ITS RELATION TO PEDIATRIC PRACTICE.*

BY

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Questions of anaphylaxis and immunity are closely associated, and a better knowledge of the one will lead to progress in the latter. It is, therefore, important that we should find a satisfactory explanation of the phenomena of anaphylaxis.

Auer and Lewis have discovered that the immediate cause of death in sensitive guinea pigs is asphyxia, due to a tetanic contraction of the smooth muscles of the bronchioles, and that this contraction is probably peripheral rather than central in origin. Schultz has in a measure confirmed this view. Additional but less striking phenomena of an anti-phylactic shock are fall in temperature, a fall in blood pressure, a decrease in coagulability of the blood and a measurable decrease in the complement content of the blood.

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*Abstract of paper read by invitation before the New England Pediatric Society.

Dr. Goodall of McGill University, has reported three cases of sudden death in children after the first copious nursing from an eclamptic mother which are of interest in connection with anaphylaxis. The symptoms and manner of death were identical in all three cases. There was general depression, passing into coma, cyanosis, convulsions, respiratory paralysis, slow full pulse and abdominal distension. The heart continued to beat long after the respirations ceased. The onset of the above symptoms followed the first ingestion of mother's milk. Dr. Goodall has made detailed reference to the literature to prove that the child of an eclamptic mother is never healthy at birth and that the lesions are identical with those of the mother. That Dr. Goodall feels this conclusion to be inconclusive is shown by the fact that he affirms that the milk of an eclamptic mother is in itself in some manner toxic to her child. He believes that this toxin is derived from the fetus and its appendages. He makes the statement that eclamptic attacks seldom if ever set in until after there has been uterine contractions which result in pumping into the general circulation a large amount of toxin

Certain facts in Dr. Goodall's paper are to be emphasized. (1) The fact that these children were born healthy and apparently remained so until after their first "copious nursing" from the breast. (2) The symptoms with which the children died. They are very suggestive of anaphylaxis. (3) The condition of eclampsia in the mother; and the relation of eclampsia to the fetus and its appendages.

Rosenau and Anderson were able to cause anaphylactic shock in guinea pigs by first sensitizing them with extract of guinea pig placenta and after a suitable interval of time giving them a second injection of this extract. In this series of experiments an explanation of eclampsia is pointed out. The same workers have shown that hypersusceptibility may be transmitted through the female guinea pig to her young. The transmission of hypersusceptibility takes place whether the guinea pig is sensitized before or after conception, and is in no way dependent upon the milk.

The result of a series of experiments are given, which tend to show that a guinea pig sensitized to milk can absorb a sufficient amount of milk through the intestinal tract to cause an anaphylactic shock. This shock is seemingly more apt to take place if the intestinal tract is in an irritated condition.

In these facts is found a satisfactory explanation of the cause of death in the three cases of Dr. Goodall's, and we must conclude that these infants died as the result of anaphylactic shock.

The factors which were so fatally important in these infants probably play a part in a somewhat less degree in many of the feeding problems of infancy and childhood—more especially in those in which there is an idiosyncracy against some especial form of food. Examples of such food idiosyncracies are intolerance for egg albumen, for buckwheat, for strawberries, for celery and a host of other common articles of diet. Many atrophic children fail entirely to digest cow's milk, no matter what the modification, their only hope of recovery being in furnishing them with human milk. The foundation for these conditions is found as a rule in previous moderate digestive disturbances. It seems fair to assume that these children have become hypersusceptible to cow's milk. The persistent subnormal temperature and soft pulse of atrophic children lends support to this assumption. As it is impossible to sensitize an animal with its own proteins a quick recovery would be expected if these children were placed on human milk, which in fact is usually the only methods by which they can be saved. Von Pirquet and Shick early demonstrated that the period of incubation for serum sickness was from seven to ten days, and it is interesting to note in this connection that infants do well on almost any milk modification for the first week or ten days and that after this period they begin to have trouble.

Many of the diseases of childhood find a satisfactory explanation in some degree of anaphylaxis. Von Pirquet's and Shick's "serum sickness" is a classic example. Severe asthmatic attacks are not uncommon in the "serum sickness." Closely associated with this type of bronchial asthma is urticaria. It has been classed with eczema and angio-neurotic edema as a form of exudative diathesis.

Localized reactions to a second injection of antigen (sensitizing agent) occur best in those animals which give the more generalized reaction with the greatest difficulty. The most common example of such a localized anaphylactic reaction is hay fever, in which the attack can be brought on at will by exposing the sensitive individual to small amounts of pollen. There are many spasmodic conditions in children which have long been regarded as due to exaggerated irritability on the part of the child's nervous system. Laryngeal spasm, tetany, eclampsia and certain form of asthma have of late been included under a common head, known as spasmophile diathesis. The suddenness of their onset and the rapidity with which they disappear make it seem certain that they belong to the group of anaphylactic reactions rather than to an unstable nervous equilibrium. Some of the severer types of convulsive seizures undoubtedly find their origin in anaphylactic shock.

It is now generally accepted that bacterial extracts are capable of causing anaphylactic reactions. The cure of infectious diseases begins with the formation of antibodies, and with the formation of antibodies anaphylaxis takes place. This seems like a paradox. We are forced to the conclusion that these reactions are merely quantitative differences in the same curative processes. On this basis an explanation can be found for the course of the infective diseases. Death, or a rapid cure, or a prolonged illness is dependent upon the number of bacteria actually present, the amount of antibody formed and the degree of anaphylactin present. The period of incubation and the course of the exanthemata run a close parallel to the "serum disease." It is interesting to note that the nephritis of scarlet fever is quite apt to occur at about the third week of the illness, and may be looked upon as a relapse. The explanation lies in the probability that the formation of antibodies are not sufficient to destroy all the bacteria, and with their growth in numbers a sufficient amount of anaphylac-toxin is produced to cause a relapse which is local and not general in character.

SOCIETY TRANSACTIONS

NEW ENGLAND PEDIATRIC SOCIETY.

The sixteenth meeting of the New England Pediatric Society was held at the Boston Medical Library on May 13th, 1911.

The following papers were read.

(1) (*a*) The Successful Passage of an Unusual Foreign Body Through the Intestine of a Child, by W. P. Coues, M. D.
(*b*) The Importance of the X-Ray in the Diagnosis of Obscure Fracture in Children, by Wm. Pearce Coues, M. D., Boston.
(2) Vincent's Angina, by Edwin H. Place, M. D., Boston.
(3) Anaphylaxis in Its Relation to Pediatric Practice, by Godfrey R. Pisek, M. D., New York. Published in this issue.

Successful Passage of an Unusual Foreign Body Through the Intestinal Tract of a Child: W. P. Coues, M. D. If a list were made out of all the strange and curious objects that children have swallowed or attempted to swallow, it would be a long and interesting one. When these objects become impacted in the esophagus, trachea or bronchi, the throat specialists extract them with their deft fingers and cleverly made instruments. When the foreign body has passed to the stomach, its further passage through the body is usually successful.

The subject of this note is a boy about five years old, and was brought to the Accident Ward of the Massachusetts General Hospital during my service as Accident Ward Surgeon. The father, much disturbed in his mind, brought the boy in with the following history: While playing a short time before, the boy had put the object in his mouth and suddenly swallowed it. It was a jappaned tin case, containing a leaden image of the Saviour, about one and one-quarter inches long by one-half inch wide. The boy was in perfectly good condition, breathing easily, and the successful passage of the case to the stomach was demonstrated by a loud rattling noise in the stomach, when the boy was shaken to and fro, which could be heard across the room. The noise was caused by the image rattling around in the case inside the boy's stomach.

The father refused to have the boy admitted although the dangers of possible obstruction from such an object were carefully explained to him. A few days later he triumphantly returned with the leaden image in the case, which the boy had passed per rectum. The fact that this tin case so easily passed through the pylorus was of great interest to me. I am not sure now of the exact size the pylorus can stretch to at five years.

The case seems to teach a lesson that after the foreign body is safely in the stomach it may be best to let nature take its course.

The Importance of the X-Ray in the Diagnosis of Obscure Fractures in Children: W. P. Coues, M. D. That the certainty of diagnosis, made possible by a good radiograph in all cases of questionable fracture, has made some careless in their diagnosis by older methods, is true. At the same time it must be remembered that there are certain types of fracture, especially in children, in which the diagnosis is sometimes impossible without the X-ray.

Henig and Lowenstein were the first to call attention to the sub-periosteal variety of fracture. In my clinic of late we have paid especial attention to these obscure fractures in children and have found many previously unrecognized. The danger of future deformity and weakness of the extremity, rather than any immediate trouble, is the reason for placing stress on the importance of their recognition.

It is true that careless physical examinations are made of obvious fractures because of the X-rays, but this does not alter the case that certain types of fracture cannot be diagnosed without them and were formerly called sprains and bruises. Almost all cases do show, on careful examination, signs that make one, who is used to seeing this class of cases, almost certain of the diagnosis, although the general signs of fracture are absent. When a child, after ever so slight a traumatism, complains of local pain or simply of pain on pressure over a definite area of a long bone, a radiograph should be taken if possible.

I hope that the accompanying pictures will illustrate these points, as they show well what slight, almost unrecognizable cracks and fissures may exist.

Dr. Prescott: Dr. Coues' paper.

I have seen two cases, in which children have swallowed foreign bodies, which were rather peculiar. One of them was a part of a tooth-brush and the course of that was seen by the radiograph from almost hour to hour, and no trouble came from it. The other was in my own child who was playing with her sister at taking temperatures with a pin which was about four and one-half inches long and a head about the size of a shoe button, when it slipped down. We knew nothing about it until ten days afterward when she was at her cousin's house and had pain in the rectum, and the cousin removed the pin from the rectum. How the pin ever got through the intestines—whether it got turned around, and so forth, and what had happened, we never knew—but the pin was swallowed and it was removed from her anus ten days afterwards.

Dr. Stone: Dr. Coues' paper on fractures.

It seems to me that in the diagnosis of fractures in children there are certain definite things which ought always to be borne in mind. The points are localized tenderness, particularly localized tenderness encircling the bone, impairment or loss of function and consistent history. With these three points clearly in mind, I will disagree with Dr. Coues in saying merely that you think there is a fracture. I think you can go farther and say there is a fracture.

There are two points which I would like to mention in this connection; one is the work which Dr. Whitman has done in fractures of the neck of the femur in children; the other is the fact that in the upper epiphysis of the femur, the epiphysis between the head and the neck of the femur, we have practically the only epiphysis in the body in which the line of weight-bearing is not directly at right angles to the epiphyseal line—one where the weight-bearing force is exerted obliquely on the epiphyseal line. Thus if this epiphysis is once started from its position it may gradually move and the shape of the head and neck may be altered. A partial or sub-periosteal fracture may similarly cause yielding later. All this has been worked out. Such fractures or epiphyseal separations may if neglected, give rise to great disability.

Dr. Coues: Closing discussion.

I would like to say one or two words with regard to what Dr. Stone has said, that is in regard to localized pain in these cases, and I agree most thoroughly with what he says. At the same time I have seen and I think he will agree with me and remember, cases where there has been practically no disability when these small sub-periosteal fractures have started to heal and were seen two or three days after the injury. I have had a case in which there has been no symptom which would lead to examination of the part which was hurt. I have often found that children complain of trouble a long distance from the seat of the real fracture, and I think that sometimes there is bruising and pain over the periosteum which causes a definite local tenderness without fractures.

Vincent's Angina: By Edwin H. Place, M. D., Boston, Mass. Dr. Place spoke of the clinical and bacterial importance of the disease and gave a very complete description. Many investigators have described it, among those Miller, 1883, Plaut, 1894, Clark, 1879, Vincent, 1896 and 1898, and since then large numbers of investigators.

The bacteria found in the lesions are the bacilli fusiformis and spirochete.

The general symptoms are fever, malaise and locally there is sore throat, a typical lesion. The local treatment is very important.

Vincent's angina is apparently very common. We first recognized it in 1907; before that I presume we probably overlooked a good many cases, and in the next six months I think I saw 15 or 20 cases. I have kept records of over 80 cases, and then there are many where I did not keep any records. It is very commonly associated with the infectious diseases, and these have a great influence in predisposing towards it. A great many of the cases of noma were in iligitimate babies with poor resistance and followed an attack of measles. Our best treatment was to use the actual cautery and destroy the tissue. For Vincent's angina peroxide is curative without any question, but the cure with it has been slower and there has been more irritation; it is often painful. In most cases we swab it on full strength, the three per cent commercial peroxide, with absorbent cotton until all the membrane has been removed. The chromic acid was used in two per cent. solution which seems to have a helpful action on the diseased tissue; it has no action at all on normal tissue, but the diseased tissue easily clears up. It is also useful in removing tartar from the teeth, and this I consider a very important point, for the deposit of tartar makes a little pocket in which the organisms thrive under favorable conditions, and in treating the cases it is of the utmost importance to free the teeth from tartar with a sharp instrument or by use of an acid and to keep the teeth perfectly clean, particularly right down at the edge of the gums. It is a very common condition. There is a patient in the hospital now who was supposed to have diphtheria and a few days ago two cases came in coincident with scarlet fever. I have been looking for a case involving the skin but have not found it yet. One case with chicken pox recently has a small ulcer that simulated it very much located at the anus, but it seems more probable that the disease was infectious ulceration from chicken pox.

Dr. Pisek: Dr. Place's paper.

I was very much interested indeed in Dr. Place's paper. I do not see so very many of these cases, but they do have that characteristic that one can make a diagnosis without the laboratory findings, sometimes by the characteristic clinical picture—the shallow margin, the ulceration with its slightly rising edges, and the fact that the child is usually between the ages of four and nine. The children do not as a rule, complain about it until possibly in the course of a routine examination, when one looks into the throat and finds the trouble. Then you may get the history that the child has had some difficulty in taking solid foods or refusing them altogether, and the diagnosis may be very readily cleared up by the bacteriological examination. I was much interested in the treatment with the use of peroxide of hydrogen, which is best given undiluted, and then using sterile water to get rid of the excess. I have only seen one case that persisted at all in a child who had very low resistance. As a general rule, these cases do well, and with the further development of school hygiene we are going to see fewer of these cases; since the care of the teeth, oral hygiene, is going to make a great deal of difference in the number of cases.

Dr. Morse: Dr. Place's paper.

I would like to ask Dr. Place how common the disease is, to describe his method for us in detail, and to tell us how strong a chromic acid solution he uses.

Dr. Lucas: Dr. Pisek's paper.

This is certainly one of the most interesting papers I have heard. It opens one of the fields in which there is a vast amount of work being done at present Anaphylaxis is holding the attention of almost every man working with immunization, and the connection between anaphylaxis and immunization is very close. Just exactly where this is going to bring us, and just exactly the steps to be employed in working it out, is hard to say at present. I think the explanation of some of the convulsions which we get in infancy very likely is due to sensitizing which has persisted, as Dr. Pisek has said, from previous slight infection. We know that young animals are much easier sensitized than older, and the nervous system is more sensitive in the young than in the older animals This also holds for the human and for this reason we get results very much more marked in the younger children than we do in the older. I think this is a field which ought to have a great deal more attention paid to it, and the therapeutic value which is going to come out of these researches I think will be more marked in the next few years than we have any idea of at present.

Dr. Emmons: Dr. Pisek's paper.

I have heard before of the theory that anaphylaxis might explain eclampsia, but there are two or three points which are very difficult to explain on that head. It has been supposed that it was possible there was absorption from the placenta or the liquor amnii, or in some way from the fetus which sensitized the mother, and then in some way a second dose was given which produced the convulsion. One of the difficult things to explain by this theory is what produces the postpartum eclampsia, when the entire uterus is presumably emptied; if not, entirely, the remains are so slight that there would seem to be very little possibility of absorption. Secondly, the pathological findings are those of severe toxemia, which do not seem to correspond to the picture produced by the anaphylactic reaction. I hope that the subject may be a productive one in the future; little is known of it now but it holds out many possibilities. These objections may be overruled by further work.

The causes of Dr. Goodell in connection with the nursing of eclamptic infants is a subject which is being discussed a good deal in the literature of today. The vitality of eclamptic infants varies much. Some infants seem to have very little strength while other infants which are born of eclamptics have marked resistance. I have in mind one premature infant which weighed between two and a half and three pounds, which lived and did very well, It was not nursed however. But I think it is often a serious question, clinically, to decide whether or not to allow the eclamptic mother to nurse her infant; the danger to the infant may be very great of not allowing it to nurse. At present I think that there is little doubt but that we had better run the danger of the anaphylactic reaction and let her nurse the infant.

Dr. Webster: Dr. Pisek's paper.

I have been much interested in Dr. Pisek's paper, and in this connection recall the case of a child who came to the Children's Hospital last winter who was perfectly well except for the results of infantile paralysis. In the afternoon I gave the child, who was six years old, an immunizing dose of 1,000 units of anti-toxin and that evening got a temperature of 106 degrees F. There was great sensitiveness of the abdomen and rigidity of the abdominal muscles, and the surgeons, not knowing that I had given the anti-toxin seriously considered a laparotomy until I told them what I had done. Later the urine was examined and we found there was a pyelitis, and that pyelitis existed for at least two months while the child was in the hospital. I will not theorize any more on the case than to suppose that the anti-toxin lighted up an old pyelitis.

The most interesting thing to me was the relation of anaphylaxis to rickets. About ten days ago I saw a fifteen months old baby with all the signs of rickets—particularly the nervous symptoms, restless sleep—laryngeal spasm and convulsions, and in the history of this child it was found that they had tried egg albumen and an urticaria had developed, which was present on physical examination, and it seemed to me in that case that the underlying basis of the anaphylaxis was the proteid intolerance. One thing which Dr. Pisek did not mention was the use of atropin in these cases and I think the use of atropin is indicated in these cases in relieving the symptoms.

Dr. Talbot: Dr. Pisek's paper.

I was very much interested in what Dr. Pisek has said, and as I know very little about the subject I shall not take up much time with my remarks, but would say that I have noticed in one or two instances that children who have the so-called exudative diathysis have not been able to digest eggs, and I know one youngster, the son of a physician, who is quite a boy now, and the father tells me that if he should put his finger in the white of an egg and put it on the child's face, a wheel will appear immediately.

Dr. Morse: Dr. Pisek's paper.

I was much interested in Dr. Pisek's explanation of Dr. Goodell's cases, because Dr. Goodell's explanation did not satisfy me, and I am glad to hear a better one. I think a very important point which he has brought out in his explanation of the so-called idiosyncracy of some babies to cow's milk. I think all of us have felt for many years that this was not a congenital but an acquired idiosyncracy and of course this explanation by anaphylaxis coincides with this idea of acquired idiosyncracy. One thing that does not seem quite reasonable to me is the explanation of the spasmophilic diathesis as an expression of anaphylaxis. It seems to me that at present the arguments in favor of a disturbance of the calcium metabolism, probably in some way under the control of the parathyroid bodies, as the cause of this condition are more satisfactory than those in favor of anaphylaxis.

Dr. Pisek: In closing.

I am very glad that Dr. Lucas brought up the point of using young guinea pigs. In our work we purposely avoided using the young guinea pigs, but I think perhaps it would be a good thing to try, and see how they would react to some of these experiments especially in regard to convulsive seizures. Dr. Emmons spoke of postpartum eclampsia. I did not mention that. I did not consider anaphylaxis from the obstetric point of view but simply the fact of the children having toxins pumped into them by the uterine contractions, which sensitizes the infants and finally the result of taking their mother's milk. How many of these children die is a question and I am sorry that we have not done enough of this work as yet to report on it, but we may be able to do so in the future. The good effects of atropin on the spasm in asthma would be explained if these conclusions are correct. We learn to avoid sera in children that are subject to laryngeal spasm and if possible in routine work in hospitals where prophylactic doses of anti-toxin are given it would be well to exclude these spasmophilic cases. There are a good many other problems that one does not have time to touch upon, as, for example, the proof of positive hereditary influences in tuberculosis, rather than an immunity from the mother—in other words if we think of it along anaphylactic lines the child is predisposed to tuberculosis rather than immunized. Regarding the question of the spasmophilic diathesis, I rather expected to raise more criticism. I think we are all scientific enough to discard today what we thought was right yesterday, and all we hoped to do is to throw out a few threads with the hope that somebody will spin them along and find something at the end of the yarn.

RETROSPECT OF CURRENT PEDIATRIC LITERATURE.

Diseases of the Nervous System in Children

Under the Charge of

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Use of Salvarsan in Juvenile General Paresis.—At a recent meeting of the Society of Psychiatry of Paris, Drs. Blondel and Maillard showed a girl of 17 years, daughter of a tabetic, who presented signs of hereditary syphilis, with extensive involvement of the central nervous system, suggestive of juvenile tabes, with intellectual enfeeblement. The question is raised as to whether the pathological process can be construed to be the same in this child as it was in the case of her father, who died with symptoms of general paralysis, on the basis of her much less pronounced clinical symptoms. Whether, in other words, one is justified in considering her case one of general paresis, with its hopeless prognosis; or whether the diagnosis as based on the clinical phenomena is sufficiently uncertain to justify the hope of some relief from the employment of salvarsan. While details of the clinical symptoms presented by this girl have not been published, the question raised is a most important one, and must occur to everyone who meets with these cases. In reality the whole question is one of diagnosis, and it may be said that we have already sufficient data to warrant the assertion that salvarsan is practically useless in true parasyphilitic disorders, such as tabes and paresis, and that when such a diagnosis can be positively made, it is worse than useless to employ salvarsan, for it only excites hope in the mind of the patient or his relatives, that can only end in disappointment. In the ordinary case there should be no great difficulty in separating the instances of cerebro-spinal sclerosis from those of syphilitic meningo-encephalomyelitis, or of syphilitic arteritis. It is necessary to remember the form of the pathological process in the two diseases. In the general paretic we have a slow progressive atrophy of the cortical cells, secondary to a chronic leptomeningitis of the cortex, with the result that mental deterioration, occasionally associated with general convulsions, dominates the scene from the beginning to the end. In cerebral syphilis however, we have in one case a gummatous meningitis concentrated at the base with consequent frequent, and often transitory, but repeated paralysis of the various cranial nerves; indicating to us, unequivocally, an active exudative process at the base of the brain; while in another case we have an arteritis with thickening of the arterial lumen, and consequent shutting off or diminution of the cerebral blood supply, with results that we would naturally expect, in the form of repeated syncopal attacks, transitory disturbances of speech, monoplegias, hemiplegias, or sensory pareses, all of which may appear suddenly, clearing up in a few days perhaps, and appearing as unexpectedly somewhere else. These palsies of the crainal nerves, and these transient disturbances of motor and sensory functions, dominate the scene, while the mental impairment occupies the background of the clinical picture.

This is particularly true of cerebral syphilis occurring later in childhood, towards the period when general paresis shows its greatest incidence, namely, from the twelfth to the sixteenth year. It is not true of early childhood, when mental deterioration is often the earliest sign of cerebral syphilis, but at this early period of life, of course there could be no question of general paresis, and hence no doubt as to the form of the pathological process. As a rule, therefore, it should be possible, by a careful study of the manner of onset, duration and course, of the clinical phenomena, to determine those cases where salvarsan may do good, from those where it can be of no benefit. As a matter of fact, however, every once in a while we come across a case where, although we may feel quite convinced that the child is suffering with paresis, there yet lingers a question in our minds whether the slightest atypical course may not justify a possibility of active specific cerebral disease, and therefore make it our duty to give the child the benefit of the doubt. In such instances salvarsan should be used, but no hope existed in the minds of the parents that a complete restoration to health is possible, for *in such cases* secondary destructive changes have gone so far that no cessation of the active process can ever result in a normal brain. In short, those cases of cerebral syphilis, that clinically so closely resemble general paresis that there is a doubt as to their diagnosis, are instances where the syphilitic cerebral process has produced so much structural change that no expectation of complete restoration to the normal can possibly be justified.

Diseases of the Alimentary System

Under the Charge of

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Infectious Diarrhea. Its Treatment, With Especial Reference to the Biochemical and Bacteriological Standpoint.—(*Bos. med. and Surg. Jol.*, March 2, 1911). Bowditch says the all-important etiological factor is a specific organism. This group of organisms varies apparently in countries and seasons. The presence of these organisms in breast fed and bottle fed children, varying in effect from a mild form of indigestion to severe forms of ileo-colitis. The finding of such bacteria does not necessarily lead to a clinical diagnosis of infectious diarrhoea, but should give a possible means of preventing the spread of this sickness through carriers.

A fairly typical clinical picture presents itself. The onset is not sudden usually, but may extend over a few days. When sudden, all symptoms are correspondingly increased. There is moderate fever. The pulse and respirations are not much accelerated unless the patient is overwhelmed. The mental condition is often bright. There may or may not be vomiting. The child may not look sick, and the abdomen may show signs of tenderness or other abnormality. The temperature varies in its height and duration according to the infection and other complications. The central nervous system is usually dulled; apathy appears, restlessness and fretfulness are seen in the severe cases.

Convulsions rarely occur, but signs of meningeal irritation, twitchings, etc., are found. The facies are those of prostration.

Treatment.—After the inial laxative food usually is withheld from two to ten days, while water is forced by ingestion and hypodermoclysis. The first food given was lactose, cereal jellies and waters are added which gradually replaced milk and milk products. Irrigations of normal saline were given. The quantity should never be less than two quarts. Silver nitrate solutions of two and three per cent. were given, the total quantity one pint and preceded by a cleansing enema.

Saline infusions are necessary where ingestion of liquids is impossible or contra-indicated.

Stimulants.—Brandy was seldom used. Strychnine from 1-250 to 1-500 gr. was given where cardiac failure seemed imminent.

Silver Nitrate Irrigations in the Treatment of Infectious Diarrhea in Infants.—(*Bos. Med. and Surg. Jol.*, March 2, 1911). R. M. Smith used three per cent. solutions of this drug. He first administered a cleansing irrigation of sterile water and warned against the use of normal saline because of the chemical decomposition. One pint of the three per cent. silver nitrate solution was allowed to run into the colon and the tube withdrawn. Some of the solution was expelled but no attempt was made to recover the entire amount. In adults there is apt to be pain but none of the infants manifested any discomfort. If discomfort should arise the use of an opium suppository would be indicated. The process may be repeated on the next day or the next day but one. If no benefit is derived from three injections, no favorable result is likely to follow further use of the treatment. Following the treatment the movements are usually worse for the next few hours; they are more numerous and contain much blood. A considerable quantity of dirty gray material is expelled, consisting partly of slough and partly of intestinal secretions, and pus acted upon by the silver nitrate. Within the first twenty-four hours improvement begins in favorable cases. The blood soon becomes lessened, then absent, followed soon by absence of pus. The movements are lessened, and provided food may be given to the patient the stools soon become normal.

This treatment was used in thirty-two cases. None of the patients were harmed by the treatment although three showed a severe reaction, but this was only temporary in character. Of twenty-two cases treated early, eighteen improved, of six treated thus late in the disease three were improved. Since no harm was done by the treatment and some good results were obtained it would seem worth while to give this means of treatment further trial.

Diarrhea in Infants Associated With the Gas Bacillus in the Stools.—(*Bos. Med and Surg. Jol.*, March 2, 1911). Kendall states that among the routine examinations made at the Floating Hospital was a test for the gas bacillus. The method consists of inoculating sterile tubes of whole milk with a small portion of the suspected stool emulsified therein, this is heated to 80 C. for twenty minutes, then incubated at body temperature for twenty-four hours. By so doing all bacteria not in the spore state are killed and the development of whatever spores may be present in the vegetative cells are unrestrained by the presence of nonspore forming organisms. Those cultures containing gas-forming organisms present at the end of twenty-four hours three prominent features, (*a*) The casein is largely dissolved, usually 80 per cent. (*b*) The residual casein is slightly pink in color and filled with holes, (*c*) The odor of the culture stongly suggests rancid butter. Gram stained preparations made from such growths show rather thick, short Gram positive bacilli with slightly rounded ends. In many of the cases of diagnosed infectious diarrhea these bacilli were found but no dysentery bacilli were present. The two groups of bacilli have not been found to be present in the same patient at the same time.

Treatment.—The use of buttermilk in this group of cases has been very satisfactory.

Gastric and Nuodenal Ulcers.—(*Lancet-Clinic*, April 22, 1911). Ratterman says whenever we have persistent hyperacidity of the stomach not responding to good medical treatment as it commonly does respond when due to a neurotic whim, to the influence of a loose kidney, of eye-strain, of gall stones, or of fibroid appendix, but remaining persistently in spite of treatment, we may assume either that the ulcer is either at the pylorus or first four inches of the duodenum, or that cobwebs are inhibiting motility. The Einhorn method in determining the presence of ulcers is better than depending upon the symptoms for diagnosis, because patients are often free from pain and other distressing symptoms for weeks or months at a time, even though an open ulcer of the duodenum be present.

Summer Diarrhea in Infants Under Two Years.—(*Bulletin Lying In Hospital, N. Y.*) Emelyn L. Coolidge says that the routine treatment pursued has been as follows: For bottle fed babies under one year of age, as soon as baby is seen, all milk is stopped and the baby given either barley or granum water. The gruels being made by mixing one heaping teaspoonful of flour in one pint of water cooking for fifteen minutes, then adding a pinch of salt.

This gruel is fed every two or three hours, according to age of the child, the number of ounces proper to the age. Two ounces of boiled water is given between meals. This feeding is kept up for twenty-four to forty-eight hours. At the end of the period the mother is instructed to add one ounce of milk to each pint of gruel and if well borne the quantity of milk gradually increased. In the cases that cannot take the milk, condensed milk is substituted.

Diagnosis of Gastric Ulcer.—(*Mich. State Jol.*, May, 1911). Watkins gives the cardinal symptoms as pain, epigastic tenderness, vomiting, hematemesis and visible or occult blood in the stools. Pain varying in intensity from a dull ache or a sore spot to a burning, gnawing, boring, cutting or cramp-like pain is prominent in ninety per cent. of the cases.

Painful pressure spots are not infrequently found posteriorly along the vertebral column. The most useful one is that described by Boas, and located to the left of the spinal column at the level of the tenth or twelfth dorsal vertabrae. Occasionally it may be present and the epigastric tender point absent, when it is especially valuable. At times it may be pre-meal, and in such instances it becomes more characteristic of duodenal ulcer.

Vomiting is almost invariably preceded by pain and follows the ingestion of food. The character of the food exerting a marked influence, solid food inducing pain and vomiting much more readily than liquids. Some patients never vomit, complaining of nausea and flatulence.

The vomiting of blood when present is of great importance. The appearance of the blood will vary from that of fresh blood to that resembling coffee grounds. When blood is not vomited but passed in the stools, if blood is in sufficient amount, a dark brownish to black color, and the portions will have glistening shiny surfaces.

What we learn from the analysis of the stomach contents cannot be said to be wholly conclusive, but the results may afford useful and suggestive pointings. The free hydrochloric acid may be increased, and is in a great many cases, while in others it may be normal, reduced in amount or absent, depending upon the age of the patient, the chronicity and location of the ulcer, and the presence or absence of stenosis of the pylorus. Those cases that are free from stenosis and comparatively recent may show unimpaired digestion and motility with increased or normal acidity, while chronic cases with varying degrees of obstruction are likely to give evidence of impaired motility with a variable amount of retention and impaired digestion of contents. Here the free hydrochloric acid may be reduced or absent. If retention is marked, blood, yeasts and sarcine may be found. Different test meals will give rise to a varying acidity. Graham and Guthrie pointed out that in older patients the acidity may be much lower, and due not to the extent or situation of the ulcer or to the degree of obstruction, but to fibrosis, the result of age or dissipation.

Pyloric Stenosis in Infancy.—(*Brit. Jol. Dis. Chil.*, Feb., 1911). Marsh upholds the view of Pfaundler that there are two distinct types of the disease, the one a true, organic, congenital stenosis, the other a condition in which pyloric spasm is from some cause or other first induced, and that this eventually leads to hypertrophy with stricture of the organ. He states that in the individual case it can rarely be determined whether one is dealing with the congenital or spasmodic type except in the early appearance of the symptoms and the duration of the pathologic process there may be a suggestion of an organic basis. In his six cases there was a surprising uniformity in the symptoms. The children were all apparently healthy born and with one exception were all breast fed. They all without apparent cause began to vomit during the first few days or weeks of life. In the bottle fed child vomiting began on the second day. At first the vomiting was occasional but soon became more frequent and occurred immediately after a feed or half an hour or so later. After dilataion had taken place it was not unusual for two or three consecutive feeds to be retained and then without warning the entire quantity to be ejected at one vomit. The vomiting resisted all treatment, occurred suddenly and without warning. The vomitous was food mixed with mucus and free from bile. Constipation was the next early symptom the number and amounts were greatly reduced. In cases of severe stenosis the stools contain practically no fecal matter, are offensive, dark brown or olive green in color, not unlike meconium, or on the other hand may be dry and lumpy and similar in appearance to small black balls or coffee beans. Progressive atrophy soon set in. The loss of weight is usually slow but may on occasion be rapid.

Physical examination is characteristic, hypogastric region sunken owing to emptiness of intestines while the gastric region is full and prominent by reason of the dilatation.

Visible peristalsis occurred in all his cases; this may be demonstrated by either giving the infant food or by stroking or tapping the abdomen. The peristalsis causes no pain and is present during sleep.

A palpable tumor was easily felt in four of the six cases, a hard oval mass about the size of a filbert half an inch to an inch above and a little to the right of the umbilicus.

Treatment.—He advocates the use of breast milk. When unable to have breast milk he first gave a six per cent. solution of lactose in sterile water followed by solutions of digested or citrated milk beginning with a teaspoonful to the ounce and slowly increasing the amount of milk if well borne.

If vomiting was frequent fo the first few days the stomach was washed out with warm water night and morning, if improvement occurs it is continued at least once a week for a couple of weeks or longer. If patient is exhausted and fontanelle depressed continuous saline per rectum were g ven. He advises the use of opium and beladonna and an alkali. He believes every case should be first treated as a medical case and if improvement does not follow, which is indicated by cessation of the vomiting, and improvement in the color and character of the stools, and an increase in weight imperative measures should be resorted to at once before patient is too weakened.

Congenital Hypertrophic Stenosis of the Pylorus, with Special Reference to Its Treatment.—(*Practitioner*, 1910, II, p. 659). James H. Nicoll gives a short paper on this subject based on the results of treatment of nine cases which have come under his care during the past six months. He thinks two degrees of pyloric obstruction in infants can be recognized, viz: minor (spasm?), to be treated by dieting, and major (hypertrophy?), for which early operation alone is curative. With regard to dieting each case requires to be considered individually. The diet generally prescribed by the author consists of a very thin paste made by mixing with milk flour which had been baked. Two axioms based on his experience are laid down: (1) frequent changes are necessary; if a particular food does not "stay down" after a three days' trial, it should be abandoned for another; (2) if after three weeks' dieting, even in cases of apparently minor degree, vomiting still persists, dietetic treatment should be abandoned, and operation undertaken while strength remains for the ordeal. It is pointed out that the undeservedly high reputation of dietetic measures rests on three fallacies; (*a*) erroneous diagnosis; (*b*) temporary improvement; (*c*) an exaggerated impression of the mortality attending operative treatment. Successful operative treatment depends on: (1) a skilled operator, a surgeon who can operate quickly and who has acquired delicacy of touch in manipulating the fragile structures; (2) a physician or family medical adviser, who is fully alive to the benefits of surgical treatment and who advises early operation in suitable cases; (3) a nurse who knows something of the care of infants and who is prepared to nurse the child "maternally" as well as "surgically." In concluding, the author briefly enumerates the surgical procedures of which he has had experience.

Infant Feeding in Health and Disease

Under the Charge of
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Principles of Treatment of Summer Diarrhea in Children.—At a meeting of the Eastern Medical Society of the City of New York, Dr. A. F. Hess of New York read a paper on Principles of Treatment of Summer Diarrhea in Children, emphasizing the fact that this is a disease which interests the Nations of the world as the results of its improper treatment can only be compared with the ravages of tuberculosis. The subject of treatment of summer diarrhea is in a chaotic state, because there exists an authority for every conceivable method of infant feeding.

In speaking of the prophylaxis Dr. Hess maintains that there are three main phases of prevention, namely (1) breast feeding, (2) care of cow's milk, (3) combating the high temperature. Statistics show that nursing babies are best safeguarded against summer diarrhea. The non-nursing children are dependent upon cow's milk, which without proper supervision would expose the children to this disease, thus we must concentrate our efforts to make the available food safe for consumption.

It has been shown that the summer heat has an influence on the diarrhea of infants and on infant mortality. In hot weather infants should wear light clothing, bands are not necessary. Children should be frequently sponged, and cool water should be given to drink. The waiting rooms in dispensaries should be kept cool. Churches, schools, etc., should be utilized as recreation centers so as to keep the mothers and children off the hot streets.

When diarrhea begins, withhold the food for 12 hours, give castor oil. Give water frequently to relieve the thirst. If vomiting is severe give water by rectum, adding .3 per cent. to .4 per cent sodium chlorid. The normal saline may have an effect on the fever and will relieve the dryness of the tissues.

In commencing feeding, give the child small quantities of food three in every two or three hours until the child shows that it tolerates the food. Begin feeding by giving casein milk (Finkelstein). Skimmed milk may be used. Older children do not suffer so much from the heat but are also subject to intestinal disturbances in summer. The treatment consists in giving oil, observe the starvation period, and the food after this should be rich in protein and poor in sugar. The physicians and the laity never consider the effects of the quantity of sugar on the bowels. It has been found that giving too little sugar the bowels become constipated; adding a little more sugar relieves constipation; and giving too much sugar we cause diarrhea. Dr. Hess has followed the method used in Finkelstein's clinic in the feeding of older children with diarrhea. He gives them cream cheese on toast twice daily, small amount of soups and vegetables, some well ground meat, water and white of egg. He orders no milk. Cases of dysentery rapidly get well from this diet. The great advantage of this diet is that the child does not lose much strength and the convalescence is short. Cereals are gradually added to the diet. Cream cheese is an excellent diet for such children who show an idiosyncracy for milk.

Dr. Charles Gilmore Kerley of New York in the discussion said that one of the main important measures of prophylaxis is that of keeping the child well all year around. The matter of resistance is an important factor. Mothers should be taught to take care of their children all year around not only at the beginning of summer. Mothers should be told that there is no such thing as "an innocent diarrhea." With the first sign of a green stool stop milk, give a large dose of castor oil and repeat again in 12 hours, or give a dose of Glauber's salt, 30 grains to 3 i, which will be retained especially in cases where there has been severe vomiting. Glauber's salt produces more free elimination and is especially indicated where there is marked toxemia, shown by a high temperature, marked prostration and constipation.

In the cases where marked prostration is present the best result may be obtained by hypodermic medication. Adrenalin in three to five drops at frequent intervals has a very active effect in producing increased and better heart action. This may be given with brandy hypodermically. I also use the Murphy drip apparatus to supply the water to the tissues when there has been a great deal of vomiting and diarrhea.

Dr. G. R. Pisek of New York said that the children who take loose milk, which is poor in quality, all year around can digest same better in the winter than in the summer. The child thus fed becomes ennervated and when the summer heat plus the humidity comes, the child succumbs to this disease. Mothers should be encouraged to take their children for trips on the water to break the spells of heat so as to allow the child an opportunity to recover from the heat. I should caution against resuming the use of well balanced food early. Rather hold off and feed carbohydrates that produce less heat so as to have less heat retention. Garments that allow the free circulation of air are of great help in cases of summer diarrhea. Before giving a prognosis note the condition of the skin over the abdomen, the abdominal muscles, and peristaltic action of the intestine. If the gut still shows peristaltic action it is a favorable case. If the abdominal muscle is relaxed, if there is marked prostration, and the skin over the abdomen is loose and dry the prognosis must be bad.

Dr. N. M. Mandl of New York said that artificial feeding is an inadequate substitute for mother's milk in spite of all exhaustive research work, especially so when you have not a trained nurse or an intelligent mother to prepare the food according to percentages. It is important to insist on breast feeding for the first three months except in cases of maternal tuberculosis, syphilis or incompensated heart lesions exists. The best prophylaxis for summer diarrhea in infants is to supply breast milk either by the mother or a wet nurse. It is a mistake not to allow the nursing mother or wet nurse to do some light work or to overfeed them. They should be given plain wholesome food. Too much fluid nourishment given to the nurse or mother with the idea of increasing the milk is erroneous. Constipation in the wet nurse or mother should be relieved by diet and not by remedies. As to the medicinal treatment, one must individualize in every case, although a certain amount of routine is necessary in the treatment.

Dr. Hess in conclusion said that casein milk is not to be used as a food for a long while but it should be considered as a medicine. That 90 per cent. of the stools of infants are acid, this acidity increased by fermentation of sugars and decreased by protein diet. As regards the treatment of diarrhea with cereals, I must say that I treated children with barley water and it was some weeks before the diarrhea stopped, but when I fed the children on a protein diet in dysentery cases I was surprised to find the change in the character of the stools in a few days. It is impossible to state the ratio of harm done by heat and by bad milk. I think that bad milk is a factor in causing diarrhea. Milk is not properly cared for in homes. A small milk refrigerator at home would help matters a great deal. I must confess that I have failed to meet with much success with bismuth in these cases.

The Limitations of the Caloric Method of Infant Feeding.—The underlying principle of this method is that all animals and human beings produce and give off heat; that their food requirements can be determined by the quantity of heat they excrete.

Dr. Henry Dwight Chapin of New York, in the *Medical Record*, says that because so much has been written on this subject, the profession gets an exaggerated idea of the value of this method of feeding.

From the heat producing standpoint, all foods are valuable as all will produce heat. It is absurd to suppose that foods having the same heat value are interchangeable. The growth and repair of tissue are not dependent upon the storage of heat but upon the assimilation of proteid. The following key and table will enable those who wish to become familiar with the caloric value of foods to roughly compare the heat values of mixed diets which prove to be suitable for a particular case from the digestive standpoint, when the composition and weights of the foods eaten are known:

Table of Caloric Food Values.

1 oz. Protein	yields	123 calories
1 oz. Carbohydrates	"	123 "
1 oz. Fat	"	288 "

Key to Caloric Values of Percentage Mixtures.

1 oz. Food containing	1% Protein	yields	1.23 calories
1 oz. " "	1% Carbohydrates	"	1.23 "
1 oz. " "	1% Fat	"	2.88 "

Example of Use of Key.

What is the caloric value of 32 ounces of breast milk whose composition is protein two per cent., carbohydrates seven per cent., fat four per cent?

32 oz. x 2% Protein	x 1.23 cal.	78.72 cal. from Protein.
32 oz. x 7% Carbohydrates	x 1.23 "	275.52 cal. from Carbohydrates
32 oz. x 4% Fat	x 2.88 "	=358.4 cal. from Fat.
		712.64 cal.

Heubner gives the following caloric requirements for infancy:

First three months, 100 calories per kilo of body weight; second three months, 90 calories per kilo of body weight; after that, until the end of the first year, 80 calories per kilo.

Langstein-Meyer gives the following caloric needs:

1– 2 weeks,	107	calories per kilo of body weight.
13–14 "	91	" " " " " "
25–36 "	83	" " " " " "
37–44 "	69	" " " " " "

Approximate Composition and Caloric Value of Foods.

	Water %	Protein %	Fat %	Carbo-h'd't's %	Calories to 1 oz.
HUMAN MILK	87.0	2.0	4.0	7.0	22
COW'S MILK					
Ordinary milk	89.0	3.0	3.0	5.0	18.5
Good milk	87.0	3.3	4.0	5.0	21.0
Jersey milk	86.5	3.5	5.5	5.0	26.0
CREAM	74.0	2.5	18.5	4.5	62.0
Top milk 16% fat	77.0	2.5	16.0	4.5	55.0
Top milk 12% fat	80.0	3.0	12.0	5.0	44.0
Top milk 10% fat	83.5	3.2	10.0	5.0	39.0
Top milk 7% fat	84.8	3.2	7.0	5.0	30.0
Skim milk	90.5	3.4	0.3	5.1	11.0
Buttermilk	91.0	3.0	0.5	4.8	10.0
Koumyss	89.3	2.8	2.1	5.4	15.0
Condensed milk (sweetened)	26.9	8.8	8.3	54.1	95.0
Evaporated milk	68.2	9.6	9.3	11.2	48.0
Whey	93.0	1.0	0.3	5.0	8.0
CEREALS FOR GRUELS:					
Wheat flour	12.0	11.4	1.0	75.1	104
Entire wheat flour	11.4	13.8	1.9	71.9	105
Robinson's patent barley	9.4	7.4	......	81.5	109
Cereo Co.'s barley	7.0	14.0	......	77.0	110
Cereo Co.'s oat flour	7.3	16.0	7.2	67.5	120
Cereo Co.'s legume flour	6.5	25.0	......	67.0	113
Cereo Co.'s soy bean flour	5.0	44.0	19.0	10.0	120
Rice, flaked	9.5	7.9	0.4	81.9	105

	Water %	Protein %	Fat %	Carbo-h'd't's %	Calories to 1 oz.
BREAD AND CRACKERS:					
Wheat bread	35.0	9.1	1.6	53.3	76
Entire wheat bread	38.4	9.7	0.9	49.7	71
Graham bread	35.7	8.9	1.8	52.1	75
Zwieback	5.8	9.8	9.9	73.5	123
Cream crackers	6.8	9.7	12.1	69.7	124
Oatmeal crackers	6.3	11.8	11.1	69.0	124
Graham crackers	5.4	10.0	9.4	73.8	122
Saltine crackers	5.6	10.6	12.7	68.5	125
Butter	11.0	1.0	85.0	....	225
Eggs (cooked)	65.0	11.7	10.7	....	42
Round of beef (raw)	70.0	21.3	7.9	....	45
Roast beef (cooked)	48.2	22.3	28.6	....	100
Steak (cooked)	63.0	27.6	7.7	....	52
Fish (cooked)	68.2	25.9	4.5	....	42
Poultry (cooked)	53.6	24.2	10.3	...	55
VEGETABLES:					
Potatoes (mashed and creamed)	75.1	2.6	3.0	17.8	32
Asparagus (cooked)	91.6	2.1	3.3	2.2	13
Baked beans (cooked)	68.9	6.9	2.5	19.6	37
Spinach	89.8	2.1	4.1	2.6	17

Dr. Chapin maintains that the caloric method of feeding is not one that readily lends itself to successful infant feeding, whatever value it may have in the feeding of adults. The usual percentage system as applied in this country gives a very close approximation of the caloric needs as they have thus been worked out.

Infectious Diseases

Under the Charge of

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The Manifestations of the Acute Stage of Poliomyelitis in Children.—The study of poliomyelitis in the past two or three years has furnished medical literature with valuable information regarding this disease. A valuable summary of this information supplimented by his own valuable experience is furnished by Dr. LeGrand Kerr in *The American Journal of Obstetrics and Diseases of Women and Children*, for April, 1911.

Fever is present in about 80 per cent. of these cases, the temperature ranging from 100 to 102. The rise of temperature persists until the occurrence of the paralysis, at which time the temperature either disappears or is much lowered.

Diarrhea is present in over half of the cases. Constipation occurs in a small proportion of the cases. Vomiting is rarely a prominent feature and occurs in about one-third of the cases. Cough is rather common, occurring in about one-third of the cases.

Deglutition is not uncommon and is irrespective of any condition that might account for it. It is one of the earliest symptoms and occurs in about 30 per cent. of the cases. Rigidity of the muscles of the neck has not been found to be a symptom of any value as it is seen in many other infections. Transitory loss of sensibility is often noted early in the disease. Pain is present in more or less degree in nearly every case and can be readily elicited by gentle squeezing the muscle. After a few days the pain is localized in the affected muscles.

No symptom taken individually would be of great value, but a certain combination is of value. The commoner combinations are fever, diarrhea, cough without or with dysphagia or fever cough, vomiting and diarrhea. Other combinations are much less common.

Recent pathological research seem to prove conclusively that the widespread paralysis is largely due to edematous pressure on the cord. As the edema subsides the paralysis decreases and any disability in the musculature is due to the destruction of some of the nerve ganglia.

There is a preponderance of gastro-enteric symptoms in the onset of the disease.

Treatment of Infantile Paralysis by Massage and Electricity.—There has been much discussion within the past two years concerning the value of massage and electricity in infantile paralysis. Many arguments have been presented for and against these two methods of treatment. In the April Number of *The American Journal of Obstetrics and Diseases of Women and Children*, Dr. Henry W. Frauenthal discusses the value of massage and electricity in this disease.

Dr. Frauenthal's conclusions are drawn from the experience he gained in the treatment of 1100 cases of poliomyelitis. He has failed to find any detailed account of the method of using electricity and massage in infantile paralysis.

Contrary to the general opinion Dr. Frauenthal finds that he obtains the best results by using electricity when the paralysis appears and before the temperature is normal.

Dr. Frauenthal has found the application of the Oudin or d'Arsonval high frequency current of much value. His attention was called to this by noting that the use of this current in obliterating endarteritis the skin became blanched and remained so for several minutes. With this effect in view he hopes to reduce the blood and serum compression on the nerve cells in the spinal cord. Dr. Frauenthal is positive that he has reduced the compression and hastened recovery.

It is pointed out that muscle contraction can be obtained by means of electricity when none can be obtained by the will, hence electricity is a valuable means of retaining and developing the muscle fiber until it comes under the guidance of the mind.

Many different opinions prevail as to the application of the sponge electrodes, Dr. Frauenthal is in the habit of applying them at the origin and insertion of the muscle groups involved, and laying importance on approximating the origin and insertion of the muscle as nearly as possible.

In treating the perineal gruop, these muscles being more frequently involved, one sponge is placed over the middle third of the outer side of the fibula, the foot flexed as much above a right angle as possible, and the other sponge applied over the insertion of these muscles on the outer side of the foot. In this way the bellies of the muscles are relaxed and a contraction is made more easily.

Dr. Frauenthal believes that foolish stress has been laid on the reaction of degeneration, which is very deceptive, he says that a failure to obtain a muscle contraction by a galvanic or faradic current is not necessarily evidence of degeneration.

It is an error to believe that a failure to obtain a muscle contraction by galvanic or faradic current is evidence of degeneration of the muscle fiber and that no improvement can be looked for in this paralyzed condition.

Dr. Frauenthal finds that the cutaneous surface will not tolerate the pain of the current and he must desist before contraction takes place. When the age of the patient and his cutaneous tolerance is greater, the stronger currents may give no reaction and still reappearance of function may occur.

The weakest current that will give contraction should be used, two to three minutes on any group of muscles at one time and from six to ten minutes on the body at one seance.

The manner of massage is equally important. The manipulations used are: 1, effleurage; 2, frictions; 3, petrissage; 4, tapotement.

Dr. Frauenthal has shown that cases of months and years standing have been entirely cured and others greatly improved.

Skin Eruption in Acute Anterior Poliomyelitis.—Alan G. Brown* describes an eruption which was observed in six consecutive cases of poliomyelitis during a period of one and a half weeks. The rash appeared as small papules, shot-like in character, with a small inflammatory base. The papule may or may not go on to vesiculation; when it does so the vesicle is about the size of a pinhead, and contains clear fluid. The vesicle is quite hard, and those papules which terminate in a vesicle lose their inflammatory base. All stages of papules and vesicles are seen on the same patient. There were also small impalpable pigmented spots. In all cases they were present, and most abundant on the paralyzed limbs. They were also scattered more sparsely over the abdomen, chest, and occasionally on an unaffected upper extremity. They did not appear to follow any definite nerve segments, nor to be in the least painful to touch.

Epidemic Infantile Paralysis.—B. Sachs discusses various epidemics of infantile paralysis, (*The American Journal of Obstetrics and Diseases of Women and Children*, April, 1911). He naturally draws the conclusion that a disease cannot be epidemic without being infectious or contagious.

Thirty-five epidemics have been enumerated by the author, who first claimed that the disease was not contagious, and not epidemic. In 1908 Starr had collected 44 epidemics of infantile paralysis. The careful study of the epidemic in Norway and Sweden has greatly added to our knowledge of the disease.

The epidemic of 1907 in New York City, when more than 2,000 cases were reported, and 800 cases carefully studied, made both physicians and the laity fully alive to the importance of the disease. The disease was carefully studied in New York by Dr. Bolduan of the Board of Health. The charts prepared by him showed that the cases were due to infection. He found several cases in the same family and in the same house and the massing of many cases in a certain district.

In Sweden Wickmann found the school house to be the most prolific source of infection. Most of the persons affected had either been to the school or had been in communication with the school building.

The epidemic in Rutland was somewhat different in that a large number of adults were attacked and the mortality was high. The New York committee found the mortality to be five per cent. As was stated in the New York report, "It is a more fatal disease than was supposed, and yet recoveries are more common than was suspected."

All doubts as to the infectious character of the disease has been removed by the experimental investigation of Flexner and others. The facts have now been established by transferring the disease from man to animals by the inoculation of the spinal canal of a monkey with an emulsion of the spinal cord of a child that had died of the disease, and the infection has been successfully carried through a series of monkeys, the exact disease being reproduced in each series.

Flexner and Clarke suggest that the naso-pharynx acts as the portal of entry in human beings and is the source of its dissemination to other human beings.

Osgood and Lucas have shown that the virus can survive in the naso-pharynx of the monkey for nearly six months, and long after the acute stage of the disease has passed. This suggests that a person can act as a carrier of the disease.

The health officers of the various states should issue circulars giving the important facts in regard to the disease for a large number of practitioners are ignorant regarding it. They should urge lumbar puncture in suspected cases and sending the fluid to the state laboratories for examination.

The health officer should bestir himself, if he has not already done so, before the summer is already upon us.

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*A skin eruption in six consecutive cases of poliomyelitis, (*Canadian Journal of Medicine and Surgery*, March, 1911).

Diseases of the Skin and Uro-Genital System

Under the Charge of

EBERHARD WILLIAM DITTRICH, M. D.

Instructor in the Diseases of the Skin, New York Post-Graduate Medical School and Hospital; Dermatologist German Odd Fellow's Home and Orphan Asylum; Physician Northwestern Dispensary-Dermatology

Dangers and Contraindications of Salvarsan.—Dr. Frederick Wise, (*New York Medical Journal*, April 29, 1911). To avoid the dangers is to know the contraindications. The author classifies them under two headings, the absolute and the relative. Among absolute contraindications, the majority of observers include the following:

Aortic insufficiency, aortic stenosis, aneurysm.

Diseases of the heart muscle, myocarditis, angina pectoris.

Arteriosclerosis of the peripheral blood vessels.

Diseases of the central nervous system affecting vital organs, especially when associated with degenerative changes. Cases prone to cerebral hemorrhage.

Severe cases of retinal and optic nerve lesions.

Advanced cases of pulmonary disease (excepting tuberculosis), and of renal disease of non-syphilitic character.

Diabetes and gastric ulcer.

Among the relative contraindications he mentions:

Well compensated cardiac lesions in the earlier stages of syphilis. Neuroses of the heart.

Diseases associated with fever (acute infectious diseases).

Cachexia; chronic debilitating diseases; old age.

Pregnancy, during the last five months.

Cases previously treated with enesol, atoxyl, arsacetin, arsenophenylglycin, hectin, etc.

A Catheterizing and Operating Cystoscope.—Dr. Leo Buerger, New York, (*American Journal of Dermatology and Genito-Urinary Diseases*). The latest improvements in the construction of a light-strong optical system have made possible the adoption of the convex type of cystoscope sheath. Such sheath may be used for the purposes of ureteral catheterization and operative treatment. The general shape of the instrument and the peculiar properties of the lens system, make this cystoscope valuable whenever we must work at close range. In tuberculosis and contracted bladders, we regard it as the most serviceable catheterizing and operating instrument. The deflection of the ocular gives us a telescope which permits of the introduction of operating devices of ample diameter. The original article should be read in order to understand fully all particulars about this valuable instrument.

The X-Ray Treatment of Ringworm of the Scalp.—Dr. Gibson Graham, M. A., Elder Hospital, Govan, (*The Glasgow Medical Journal*, June, 1911). In ringworm of the scalp the author believes X-ray treatment to be of the greatest value. The failures and untoward effects recorded were the results of applying the agent without protection to the patient or operator, at variable distances or at variable times, and without means for estimating the dose given. This all has been changed by regulating and rendering constant the distance of the part rayed from the target of the tube; by measuring the dose by Saburaud's pastilles; by protecting the patient and operator by suitable contrivances and by playing the rays only on the parts desired; the tube being the only variable factor. With a well regulated tube, with a spark gap of 20 cm., penetration as indicated by a radiometer (Dean) 4-7, and Saburaud pastilles, he considers the operation of epilation absolutely safe.

The X-ray treatment is suitable for all kinds of ringworm. The researches of Saburaud and others have revealed a host of species of ringworm fungus, which however for practical purposes may be divided into two main groups:—large spored, megalosporon; and small spored microsporon.

The small spored ringworm is caused by the microsporon Audoini. It is common in Scotland.

The diagnosis having been made, our object is to remove the hair completely from the affected area and to prevent reinfection of the adjacent parts. His method is the following:

The hair is cut short, so that the full extent of the disease is rendered visible. The rays are applied to the affected areas with the precautions mentioned. After a successful raying the hairs begin to shed on the fourteenth day, and complete baldness should result in a week later. This process may be assisted by the parent pulling out the loosened hairs with a pair of epilating forceps.

Causes of failure are a too soft tube or imperfect apposition of the parts to the speculum.

Then he orders the child's head to be washed every night with carbolic soap and hot water, or in dispensary practice with soft soap and water, dried well, and a 10-20 per cent. of salicylic acid in methylated spirit lotion swabbed over the patches. This leaves a fine powder of salicylic acid on the patches. On the fourteenth day the child is brought up for inspection and the state of the hairs as to loosening is tested. They should then be quite easily pulled out with forceps. On the twenty-first day another inspection takes place, and the patch or patches rayed ought to be quite bald, especially if the parent has intelligently assisted the process with forceps.

The result of the treatment thus carried out is that a regrowth of healthy hair takes place at the end of two months, and the new growth is complete at the end of three months from the date of raying. Thus this disease, which under the old methods of treatment by ointments, lotions and manual epilation, often ran an uncertain and unsatisfactory course for months and even years, can by the X-rays be brought to a successful issue in three months. (Although there is no question, as to the valuable efficacy of the X-rays in this trouble, I think that the author's views are a little too enthusiastic.—E. W. D.)

On the Means of Finding the Spirochetae Pallidae, with Special Reference to the India Ink Method.—Dr. J. S. Cohn, Chicago, (*Interstate Medical Journal*, January, 1911.) The advantage of the India ink method for finding the treponemata pallida is self-evident.

Its extreme simplicity and the fact that anyone with even a moderate knowledge of the microscope can have within his reach a rapid microscopic diagnosis of syphilis, make it superior to any other method in the hands of the general practitioner.

Serum is produced from the lesion to be examined as follows:

It is first cleansed if necessary with soap and water to remove any pus or granular epithelial debris. Sometimes the irritation produced by the gauze alone on an ulcerated surface will bring forth numerous bleeding points. At other times the surface of the lesion, espcially a mucous patch or papule, must be curetted with a small scalpel or other sharp edged instrument, until the flow of serum is produced. The lesion should be curetted where the sound and necotic tissue join, and sometimes the floor of the lesion must be scraped. As only serum is desired, any blood is wiped away, and the eroded surface compressed firmly with gauze. This checks the hemorrhage and immediately upon the removal of the gauze there is a copius flow of serum. One loopful of serum is mixed with one loopful of India ink on a glass slide and the mixture is immediately spread over the slide in a thin film by drawing the edge of another slide over the first, as in making a blood smear. The film dries in half a minute without heat and should be brown to black in color. It is placed at once without mounting or further fixation under the oil immersion lens. On examination, the whole field is seen to be of a homogeneous brown or black color with the spirochetae, blood cells and other extraneous material shining through as colorless refractive bodies. The recognition of the spirochetae pallidae depends on the observer's ability to differentiate them from other spirillae and to appreciate their distinct morphological characteristics.

The treponema pallidum is known by its numerous and very acute and absolutely regular windings. Its length is about three times that of a red blood corpuscle and it consists of a very slender thread closely wound in a cork screw form while the others differ chiefly by the irregularity of their windings, the greater size of the thread and by exhibiting a smaller number of gyrations.

Treatment of a Syphilitic Infant by Administering "606" to the Nursing Mother.—A young woman, aged 19, suffering from syphilis was treated at the skin clinique at the University of Freiburg for specific skin eruptions and large masses of condyloma of the genitals. The Wassermann reaction was positive and spirochetes were numerous. She was confined on the fourth of July of an infant weighing 2,400 grms., and having a wrinkled and somewhat shriveled appearance. No specific symptoms manifested themselves until the twelfth of July, when numerous bulle of pemphigus made their appearance chiefly on the soles of the feet, and syphilitic onychie developed round the finger nails on each of the hands. Owing to the tendency of other specific symptoms to develop, it was decided to subject the nursing mother to treatment by "606." Accordingly injections of .03 g. of arsenobenzol in an aqueous solution were made in both buttocks. Characteristic reaction followed these injections, but on the third day there was commencing diminution of the size of, and of the discharge from, the condyloma of the mother, and disappearance of the spirochetes. On the tenth day the Wassermann reaction was still present. On the first and second day of the treatment of the mother there was an augmentation of the symptoms from which the child was suffering, but by the end of the third day further development was arrested, followed by a sudden attenuation of all symptoms. By the fifth day the copper color of the skin was giving place to a more healthy tint. Disappearance of the onychie and of the pemphigus blebs followed, although there was still visible some marginal scabs of the dried up vesicles. While at first the child was unwilling to sieze the nipple and cried continuously, it now emptied the breast at each repast. By the 29th of July the child weighed 3,900 grms. and presented none of the specific symptoms. It would appear from the foregoing statement that the treatment of the mother by "606" was instrumental in curing the child, though no trace of the remedy could be discovered in the samples of the mother's milk which was carefully analyzed during the progress of the case.—*Munch. Med. Wochenschr.*

BOOK REVIEW

The Medical Diseases of Children. by Reginald Miller. M. D., (London). M. R. C. P. Physician to out-patients. Paddington Green Children's Hospital; Physician to Out-patients, St. Mary's Hospital; Lecturer in Pharmacology and Therapeutics, St. Mary's Medical School; Late Medical Registrar and Pathologist, Hospital for Sick Children, Great Ormond Street. 518 pages, profusely illustrated. Cloth binding. $4.00 net. Wm. Wood & Co., 51 Fifth Avenue, New York City.

In the preparation of this work on pediatrics, the needs of the student and practitioner have been considered by the author, who has endeavored to write a short but complete account of the diseases of children in accordance with modern views. The author assumes that the reader has a working knowledge of diseases of adults to start with and his main attempt is to put the reader in a way of acquiring a similar grasp of the subject of pediatrics, which, of late years has become an important branch of medicine, and every medical man in general practice knows that in his daily work much attention will have to be devoted to the diagnosis and treatment of diseases of children.

There are many excellent manuals dealing with the diseases of children on the market, but the present book is by no means superfluous, and we feel that it will find a place in the practitioner's library. The opening chapter of this volume deals with the examination of children. It is most carefully written and contains much sound common sense. It is followed by a chapter, which treats of the development and the feeding of children, and is handled in a most excellent manner, being one of the best articles on infant feeding that we have been permitted to study.

Chapters are devoted to the various systems, the principal medical diseases in each being considered. We observe that the author, in the arrangement of this book has departed from the beaten track in disease classifications. He attempts to classify all the infective processes according to their particular infective organisms; for example, all pneumococcal manifestations are included for consideration in one section. The ground for new classifications seems to be well taken and may eventually be adopted by the leading writers and teachers of diseases of children.

We regret that the subject of treatment does not receive greater attention in this work, as we hold that a text-book dealing with medical diseases, the subject of therapeutics ought to occupy an important position and especially a work designed to cater to those in general practice, we believe the treatment of diseases should have been discussed more at length and in detail. The same criticism may be applied with good respect to symptomatology and diagnosis. Apart from these objects the work is excellent and covers most excellently the field of medical diseases in children.

The work closes with two useful appendices. The first deals with dietetics and therapeutic measures, while the second is devoted to an account of the societies, institutions, etc., aiding invalid children. The work is well illustrated and many useful tables and diagrams are included. We have been most favorably impressed by the work, and can, with confidence, recommend it to senior students and those in general practice. It is quite practical, a fact, of course, which adds greatly to its value. The English publishers, John Wright & Sons, of Bristol have made a wise selection in their American publisher.

A Manual of Diseases of Infants and Children, by John Ruhrah, M. D., Clinical Professor of Diseases of Children, College of Physicians and Surgeons, Baltimore. Third revised edition. 12mo volume of 534 pp. fully illustrated. Philadelphia and London. W. B. Saunders Company, 1911. Flexible leather, $2.50 net.

This little book has been prepared primarily for the medical student, as well as for the busy practitioner, not to supplant, however, the larger textbooks on the subject, but to enable the student to grasp quickly the more important parts of the subject of pediatrics, and to furnish him, and the practitioner as well, with a rapid reference book for clinical use. Dr. Ruhrah, in the preparation of this manual has consulted the more important textbooks, as well as the periodical medical literature of the age. The third revision has not been much enlarged, and still remains a manual. The chapter on Infant Feeding has been made more comprehensive than might be expected in a small manual, but owing to the great importance of the subject the author has deemed it wise to make it full and complete. A valuable feature of this work is the reference to be found on the margin of each page, whereby the reader may, if he chooses, search deeper into the subject. Dr. Ruhrah devotes considerable space to the subject of infectious diseases, which is brought thoroughly up-to-date.

Some 60 new illustrations have been added to this revision. Student and general practitioner alike will welcome this book on his library table, the new edition being a welcomed one. The publishers, recognizing its value, turn it from their presses on good paper, well bound in flexible leather. The work looks well in its new dress.

A Practical Medical Dictionary, by Thomas Lathrop Stedman, A. M., M. D., Editor of "Twentieth Century Practice of Medicine," Editor of the Medical Record. Profusely illustrated. Bound in dark green flexible morocco, round corners, quarto volume, with thumb index, $5.00 net. Without thumb index, $4.50 net. William Wood & Co., 51 Fifth Ave., New York.

Stedman's Dictionary embraces all the points of superiority claimed by publishers of other dictionaries, and in addition includes the following features, some of them entirely novel: It gives the derivation of all words (when known) from the Anglo-Saxon as well as Latin and Greek. Pronunciation is indicated whenever it is not self-evident, and accent marked in all the main titles and in most of the sub-titles. Tables of all the large (*i. e.*, numerous) anatomical structures, such as arteries, muscles, nerves, sulci, convolutions, foramina, fossae, and pharmaceutical preparations, such as acids, tinctures, etc. These are not given in tabular form across the page so as to confuse one in searching for words, but are run along in columns in alphabetical order, distinguished by different type.

Besides the regular medical terms this dictionary includes; dental terms, chemical terms, veterinary terms, botanical terms, insurance terms, homoepathic terms, ecletic terms, biographical data (nationality, date of birth) with the eponymic terms. All the (BNA) terms are indicated. All the preparations of the United States and British Pharmacopoeas and National Formulary. Chemical symbols are given with the names of acids, salts, etc., and also entered as main titles referring back to the full name. It also includes mineral springs, giving pronunciation of place, (if foreign), country, character of water, and indications for its use; Thesaurus, that is, defining back from the English or popular terms to the scientific. Words which should begin with a capital are so printed. The spelling of U. S. P. is used.

While there is no lack of medical dictionaries on the market at the present time, yet it must be admitted that none of them is free from serious defects. This newest one, written by a highly cultured scholar who has had great editorial experience, and who has especially aimed to improve upon the shortcomings of existing books, will, it is believed, justify its existence by its merit. It gives the derivation, pronunciation and definition of upwards of 60,000 words. It is incomparably the most accurate, scholarly and complete medical dictionary in existence.

One would suppose that novelties in dictionary-making was practically impossible, but nevertheless the author and publishers have introduced a number of novelty points, giving the derivation of all words (when known) from the Anglo-Saxon as well as Latin and Greek, with careful attention to pronunciation. That improvement may be made in so technical a book as a medical dictionary is shown by the excellence of this publication which has just been sent out by William Wood & Co.

The Mysteries of Life, in four volumes. Book 1, "What a Mother should tell her Little Girl." Book 2, "What a Mother should tell her Daughter." Book 3, "What a Father should tell his little Boy." Book 4, "What a Father should tell his Son." By Isabelle Thompson Smart, M. D. Medical Examiner of Defective Children, Department of Education, City of New York. Special Lecturer, New York Normal School of Physical Education. Member American Academy of Political and Social Science. Member Woman's Society for the Prevention of Crime. Fellow New York Academy of Medicine. Member American Medical Association, etc., etc. Published by the Bodmer Co., New York.

Book 1, "What a Mother should tell her Little Girl" and book 3, "What a Father should tell his Little Boy," of this series are designed to answer in an honest and reverent manner the questions, which arise in the minds of every little boy and girl, concerning their origin and how they came into the world. The author, Dr. Smart, handles these subjects in a most scientific, artful and interesting manner. She tells just how and what should be told a little boy and girl about the designs and functions of the reproduction organs and in such a way as to beget reverence and inspire purity of thought in the mind of the young readers. No physician can make a mistake in recommending book 1 to a mother for her little girl, or book 3 to a father for his little boy. The editor wishes it were possible for every boy and girl to read the book intended for them. There is nothing in either volume that a boy or a girl ought not to know or that would be unfit for either of them to read and we are satisfied that they would have a different idea of the subjects under consideration after reading this book and we heartily recommend them.

Book No. 2 treats of certain subjects that a mother should tell her daughter and book No. 4 tells of the things a father should tell his son and are really companion volumes to the two books just mentioned. In these pages the author, in a plain, satisfactory manner answers the mysterious problems which perplex the mind of every young man and young woman. Impurity and pruriency have no place in these pages. The author thoroughly understands of what she writes and to whom she writes. There is no evading or half concealing, the subject matter is made plain and intelligent to the son or daughter. Both books contain chapters on evils to be shuned and consequences to be dreaded and disclpses the dire consequences that attend vice nowhere else found in language. The wide dissemination of such information as contained in this series, which tells of the story of the mysteries of life can be found nowhere else and its study by the young will save multitudes of young men and young women from paths of vice and ruin. This series merits a place in every public and private library.

Tuberculosis as a Disease of the Masses, and How to Combat it. International Prize Essay, by S. Adolphus Knopf, M. D., Seventh edition.

This booklet, which will be remembered as having been awarded the International Prize at the International Congress to Combat Tuberculosis as a Disease of the Masses, held at Berlin, May 24 to 27, 1899, has just been presented to us in its seventh American edition, after having been most carefully revised and enlarged.

As it reads today we can without hesitancy refer to it as a mine of exhaustive information upon the subject of tuberculosis, not only for the professional reader but for the layman as well. Its content is sane, and not sensational—as so much that is written now-a-days on tuberculosis is liable to be—containing nothing that is likely to either frighten or offend. It is arranged in thirty-three short but concise chapters, each one a gem of thought upon the subject, and any one of which, carried away and acted upon by the reader, will help greatly in the anti-tuberculosis campaign. The chapters upon tuberculosis among children, and the opportunities of the municipal government to do the most effective preventive work by the forming of open-air schools and the careful physical examination of the pupils in the public schools, are among the most important portions of the essay.

OUR OCTOBER ISSUE WILL CONTAIN THE FOLLOWING PAPERS.

The Only Child, by John Ruhrah, M. D., Professor of Diseases of Children, College of Physicians and Surgeons, Baltimore, Maryland.

Cerebro Spinal Meningitis, by Rufus E. Donnell, Gardiner, Maine.

Welfare of the Child, From the Eugenic Standpoint, by Dr. Milton J. Bliem, San Antonio, Texas.

Atypical Scarlet Fever with Report of Case, by W. H. Anderson, M. D., Wilson North Carolina.

Tonsillitis, by William F. Waugh, A. M., M. D., Professor of Therapeutics. Bennett Medical College, Chicago, Illionis.

Taka-Diastase in Nocturnal Enuresis, by Arthur A. Radcliffe, Waukegon, Illinois.

OUR NOVEMBER ISSUE WILL CONTAIN THE FOLLOWING PAPERS

The Child as an Asset to the Nation, by A. M. Paterson, M. D., Professor of Anatomy, Liverpool University, Liverpool, England.

On the Medical Examination of Children Reported as Mentally Defective in the Public Schools, by Isabelle Thompson Smart, M. D., Medical Examiner of Mentally Defective Children to the Department of Education, New York City, and Mary Sutton Macy, M. D., Lecturer on Physiology and Pathology in Education School of Pedagogy, New York University.

The Rational Treatment of Some Common Symptoms Occurring in Infancy, by Eric Pritchard, M. A., M. D., Oxon., M. R. C. P., Lond.

Scarcoma in Infancy and Early Childhood, by Q. W. Hunter, Louisville, Ky.

The Management of Infantile Eczema, by A. J. Markley, M. D., Professor of Dermatology, University of Colorado Medical School, Denver, Colorado.

Enteritis in Infants and Its Dietetic Treatment, by H. D. Newkirk, M. D., Minneapolis, Minn.

PEDIATRICS

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EDITORIAL

THE NECESSITY FOR INSTRUCTING CHILDREN IN SEXUAL SUBJECTS.

There is an old adage which states "A little knowledge is a dangerous thing," and a more recent dictum is that "Too much knowledge can be equally dangerous." We are reviewing in this issue a work by Dr. Isabelle Thompson Smart, of New York, "The Mysteries of Life" in four volumes—booklets which are admirably adapted to instruct the young on the subject of sexology.

To the rapid advances of medical science is due a new conception of matters sexual, and we are now emerging into a new sex dispensation, as it were, and are on the eve of grasping a new and fuller understanding of the development of the moral man. This new idea enables us to see that "sex is the largest and most complex, the most important and interesting of all human themes." It elevates the importance of man as distinguished from brute creation. "He brings forth a being endowed with immortality, a creature who is to be a conscious personality, to think, to suffer and enjoy, to will; a social entity, which shall effect for good or evil his fellow creatures." "Around it centers the highest aspirations, the noblest sentiment, the loftiest ideals, the purest devotion of which humanity is capable." On its virility and considerate exercise depends the happiness of the home and the stability of the nation. It was given to man to sensatize growth into vigorous manhood and womanhood; to develop the masculine character of man and the subtle charms of woman; to command respect and adoration and make love sublime. Stifle this instinct, abuse its functions, or permit it to be uncontrolled and death is the penalty, or far worse, depravity and remorse.

This false idea—or false modesty, more properly speaking, has prevented parents and teachers from imparting the necessary medical instruction during childhood and youth. They have falsely labored under the erroneous impression that anything relating to sex was immodest, impure and even vulgar. This explains why the minds of the young are so perverted on the subject of sexuality. Darkness and ignorance. nourishes the mysterious.

An editorial writer in the *Cincinnati Lancet Clinic*, in discussing this subject says: "Those who object to any sexual education of the child instinctively feel the danger of imparting too much knowledge of sex prior to an age at which it may be presupposed that the child has acquired strong ethical ideals. We have only to note the way in which the average child will pull apart and investigate anything from a captured fly to a doll or toy watch to see its 'insides' or 'how it works,' to be made aware that the child is instinct vely given to research and experimental investigation; inco-ordinated, of course, yet with many children such an instinct is just as strong as that to be observed in the experimental physiologist or in any other laboratory worker. Hence it is necessary to point out that it would be very unwise to impart to a child any more knowledge of sex than the child's spontaneous instincts lead it to desire, just as we have in foregoing discussions pointed out that it is unwise to attempt to repress and evade the natural desire for such knowledge that arises instinctively." Instruction in sexual matters should, probably for the present, be best undertaken by the mother, aided by the family physician. Many prejudices on the part of the parents will undoubtedly have to be overcome. This can be accomplished by the tactful physician, not so much by a formal talk with the mother, as by the passing observation as opportunity offers of the dangers incident to permitting children to grow up entirely ignorant of sex or imbued with fanciful ideas. The younger the child, the easier the task of such instruction, but this does not mean that the child should be told more than it is necessary for it to know. Enough is sufficient, and information imparted should be in accord with the curiosity manifested. The very young child rarely is curious with respect to more than the eternal question (particularly with little girls) as to where babies come from. This question will often be asked even by a child of five or six. It should be answered as simply as possible. Later, tendencies toward auto-erotic stimulation may be inhibited by a tactful warning. At twelve or thirteen the child should be prepared for the onset of puberty, and in girls the menstrual function explained. After puberty it is usually impossible to conceal from children the function of the male in reproduction. Most boys are familiar with that anyway at the age of ten. Still later, as a preliminary to marriage, both the young man and the young woman should be accorded more detailed information in sexual hygiene.

WHY THE CHILD CRIES.

Healthy infants and children sleep perfectly quiet. Frequent turning of the body or twitching of the muscles generally indicates feverishness or digestive derangement. If the child move his head constantly from side to side on the pillow, he is probably annoyed with pain in the head or ear. Frequent carrying of the hand to the forehead or side of the head has usually the same significance. If the child repeatedly flex the thighs on the abdomen and cry violently in sudden paroxysms, he is probably suffering from colic.

The cry of the child is a symptom of considerable importance. It is usually elicited by hunger or uneasiness, and from the manner of crying we can often gather considerable information. A hungry infant in most cases clenches his hands and flexes his limbs—both arms and legs—as he utters his complaints; and will often continue to do so until his desires are satisfied. Thirst may also be a cause of crying, and may be suspected if the child sucks his lips repeatedly, has a dry mouth, or has been suffering from purging. If he is tortured with colicky pain, the cry is violent and paroxysmal, and is accompanied by uneasy movements of the body and jerking of the lower limbs. The belly is also full and hard, and there is often a blue tint around the mouth. A shrill scream uttered at intervals, the child lying in a drowsy state with closed eyes is suggestive of tubercular meningitis. A constant unappeasable screaming is often the consequence of earache. This painful affection is very common in infants, and should be always suspected if the lamentations continue without intermission, and the child frequently presses the side of his head against his mother's breast. The pain of pleurisy will also cause violent crying. In this case, pressure upon the sides of the chest, as in lifting the child up, causes an evident increase in his suffering. Any altering in the quality of the cry must be noted. It may be hoarse in a young infant from inherited syphilis; in an older child from laryngitis or enlargement of the bronchial glands.

In a healthy child the cry is excited at once by anything which causes him discomfort or inconvenience; therefore the absence of crying is a symptom which should always receive due attention, as it may betoken serious disease. In inflammatory affections of the lungs, in pulmonary collapse, and in advanced rickets where the bones are softened, a child will bear considerable discomfort without loud complaint, for he has a pressing want of air and dare not hold his breath to cry. So, also, in severe diarrhea or any other illness which causes great reduction of strength, the child, on account of his weakness, cries little if at all. In cases of profound weakness he will often be noticed to draw up the corners of his mouth and wrinkle his brows as if to cry without making any sound.

In the act of crying tears are copiously secreted after the age of three or four months. In serious disease, however, the lachrymal secretion often fails. Therefore the absence of tears must be taken to indicate considerable danger.

ACUTE INTESTINAL TOXEMIA IN INFANTS.

Several months ago we published a review of a work on this subject by Ralph Vincent, M. D., of London. This work* comprises an address, which Dr. Vincent delivered before the Glasgow Obstetrical and Gyneological Society in November, 1910.

This is a subject the importance of which has been increasingly appreciated of late years, and which has been investigated by different observers from various points of view. Dr. Vincent has produced an extremely interesting paper, the thesis of which may be briefly stated to be the extreme importance of providing infants with a clean unaltered milk. He holds that study of intestinal toxemia from the clinical, bacteriological and experimental aspects demonstrates that a clean raw milk unboiled and unaltered, except by arrangenemt of the percentage constituents, is the essential factor in securing freedom from this most fatal toxemia. This view is, of course, not a new one, but Dr. Vincent has many striking observations and experiments to record, which serve to support his opinion, and his lecture was well worthy of reprinting in this form. The disease, as he points out, has not declined in frequency with the progress of sanitation; indeed, there is every reason to suppose that it is somewhat on the increase. It is a seasonal disease associated with high temperatures and a dryness of the atmosphere; it is an urban disease; it is a disease of the poorer classes of the community; and it is a disease of the artificially fed infant. Dr. Vincent determined to experiment with suckling kittens, which were fed, first upon fresh unheated milk, and afterwards in a series of experiments on milk heated to varying degrees of temperature, and either incubated without inoculation with bacteria, or incubated after infection with various pathogenic bacteria, those selected being B. subtilis, B. mesentericus vulgatus, and B. proteus vulgaris. The course of the affection after the experiments were begun was striking. For several days the kittens remained absolutely fit and well; then they became dull or weak; within twelve hours of the first symptom they were seriously ill, and within forty-eight hours were dead. Dr. Vincent carried out post-mortem examinations of these animals, and from his investigations has drawn the conclusion that the disease is caused by the absorptions of poisons produced by the action of certain micro-organisms whose normal function is the dissolution of dead organic material. "These organisms, while always present in the healthy alimentary canal, are under normal conditions quite unable to carry out this function since they are inert in an acid medium. The essential cause of the disease is the inability of the infant to protect itself from the action of these organisms, owing to its food being so altered from its normal character that the necessary supply of lactic acid cannot be maintained." The conclusion is that, in Dr. Vincent's words, "boiling the milk utterly destroys the balance provided by nature. * * * * Fresh raw milk is the fundamental requirement of the infant."

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*On Acute Intestinal Toxemia, Bailliere, Tindall and Cox

Dr. Vincent concludes his paper with some remarks upon the urgent necessity of more efficient methods of ensuring the cleanliness of milk. It is common knowledge that milk as provided in our large towns is frequently very dirty, but Dr. Vincent believes that without material addition to the cost it can be provided in a much cleaner state than at present. The risk of tuberculous milk infection, Dr. Vincent believes, has been exaggerated, and he thinks that the surest way to prevent it is to provide the infant with the food which will best suit its physiological needs.

PASTEURIZATION OF MILK.

The pasteurization of milk covers a multitude of dirt and the milk dealers are wise to the fact. "The doctors have discovered a patent remedy for dirt." This is the milkman's view of the situation, and they are growing quite enthusiastic on the subject and advertising the fact extensively that all milk distributed has been thoroughly pasteurized, but the milk is quite as dirty as it was before, it is even dirtier; and the dirt is more difficult of detection, being rendered more obstinate and elusive. One thing necessary is that the younger men taking up the practice of medicine should thoroughly understand cows. They ought to acquaint themselves with the important factors concerning the production of milk. They should familiarize themselves with the chemistry of milk. When this is achieved they will be in a position to examine the milk their patients are consuming. They will be able to deal from a practical knowledge with the representation of the milk vender and thereby the reform of the milk supply will be gradually, but surely achieved. Dr. Vincent, in discussing the subject of tuberculosis in children, states that during the past five years he has kept a careful record of all cases of tuberculosis in infants and young children coming under his observation and the striking fact noted in them all is that in not a single case was the infant or child fed on boiled, pasteurized or sterilized milk.

Dr. Emmett Holt, New York City, in discussing this subject lays much stress upon the alleged claim that tuberculous milk is a means by which children are affected. He believes that there is little to support the view that children contract tuberculosis in this way. While infection from milk is possible, it is certainly extremely infrequent.

THE "ONLY" CHILD.

In the good "old days" when families of children ranged from six to fifteen, there was little "coddling" less "joggling," fewer "spoiled" and less neurastheniac children than now-a-days, but in this day and generation, when motherhood is tabooed—and a family of more than two children deemed a crime, the poor little lonely tots are being killed by too much love and attention, too much petting and pampering. A little judicious neglect will have the effect of making the child hardier and better prepare him for the rough and tumble of life's strenuous struggle.

We are now assured that the state of affairs is very bad indeed, in Vienna at least, where Dr. Friedjung reports most of the cases he investigated as more or less neuropathic. Then there was waywardness, unusual mental ability and considerable disturbances in spite of the greater care they are supposed to get. Before jumping to the conclusion that all these abnormalities are due to adversities of an abnormal environment, it would be well to look into heredity a bit, for parents having but one child are not like average parents. Something has prevented the usual number of pregnancies, and these average factors may be the cause of the infantile abnormalities which were thus acquired before birth, not after; and may indeed have been inherited in the strict sense—such as unusual mental ability or nervous instability. Perhaps the unusual care bestowed on an only child is what keeps it alive, as it may perish if it is made one of a herd. Some are the very kind we want in civilization, the nervous men of unusual originality, or administrative ability. So let us go slow in depriving them of the care which may keep them alive, for we may go to the danger line of neglect in a case needing things which would be harmful luxuries to the more lowly organized. —(*American Medicine*),

PEDIATRICS

ORIGINAL ARTICLES

WELFARE OF THE CHILD FROM THE EUGENIC STANDPOINT.*

BY

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Much attention has been given of late years to this subject. The cry of the children has been heard and civilized races are beginning to realize, as never before, that their sole vital asset for the future is in the children and that their true wealth is life. Therefore, what concerns the welfare of the child involves the future failure or success of the nation, of the race. The individual dies, the race goes on. Three times within a century does the race renew itself by making a fresh start with individual babies. Nothing therefore in all this world dominated by intelligent man exceeds in importance the welfare of his infant successors.

"It is the master paradox, that at his first appearance the lord of the earth should be the most helpless of living things. Consider a new born baby. Unable to stand, much less to wander in search of food, very nearly deaf, all but blind; well nigh indiscriminating as to the nature of what is presented to its mouth; utterly unable to keep itself clean, yet highly susceptible to the effects of dirt; able to indicate its needs only by alternately turning its head, open-mouthed, from side to side and then crying; possessed of an almost ludicrously hypersensitive interior; unable to fast for more than two or three hours, yet having the most precise and complicated dietetic requirements; needing the most careful maintained warmth, easily injured by draughts; the prey of bacteria (which takes up a permanent abode in the alimentary canal by the eleventh day). Where is to be found a picture of more helpless dependence? How comes it that this creature is to be the lord of the earth and a member of the only species which succeeds in continually multiplying itself?"—*Seeleby.*

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*Read before the Bexar County Medical Society in open session.

The human child is the heir of all the ages. He is the final and highest fruitage of that age-long process which is known in science as organic evolution. Upon the welfare of the child depends the welfare of the race. It is indisputable that modern civilized nations have attained to their present superior worth only by the same "struggle for existence" ending in the "survival of the fittest" which has characterized all other living organisms. It is granted that evolution has reached its highest physical attainment in the body of man. This is true even of the most primitive man ever concealed in his geological shroud. From such evidence as can be read in the strata of Mother Earth many scientists claim that human life has been present on this planet for at least 2,000,000 years. We can thus form some conception of the inconceivable eons of time involved in that process of creation which is still going on; and in all that time the evolution of man has been going on, breeding more and more to a higher type of mind, of intelligence. Henry Drummond has fittingly written of this later psychic phase of man's development as the "Ascent of Man." That this development is still ever going on must be patent to all. True it is, the highest peaks of human intelligence seen, in some respects, to have been touched by the immortal Greeks, and other ancient worthies, and the loftiest height is universally conceded to Him whom Christians worship as Lord and Master. But what are a few thousand years compared with the millions gone before which belong to our age of man? Undoubtedly the average standard of intelligence today is immeasurably greater than it was even 100 years ago.

Among the species below man Nature has had full sway to work out her law, viz: That the struggle for existence must inevitably result in the death and disappearance of the weaker and less fit, and the final survival of the fittest; that is, of those best adapted to survive amid their environments. But the struggle for man has been constantly modified and Nature even opposed by man's intellect and by his moral nature, through his domination of his environments. By means of his intellect as exercised through his power of speech, and the art of writing, great scope was added to the number of those able to survive, and so by his repeated conquests of Nature, down to the present time, this curious fact is brought about, viz: That man, whose birth rate and death rate are lower than those of any other animal, is yet the only animal whose numbers are continually increasing.

So impressive did this fact become in the mind of old pastor Malthus, over a hundred years ago, that he entertained grave fears that the population of the world would soon out-grow the available food supply. He wrote a book in which he proposed a remedy that should control and retard the birth rate, which was entirely moral in its intent; namely, that no man should marry until he was in a position to rear and support a family. Of course the good man could not forsee the great new sources of food supply which would be opened within the century in new parts of the world. But strange to say, economists of our day are again seriously discussing the same threatening danger. It is said that fully one-third of England's population lives on the verge of starvation; that three weeks would exhaust her food supply. And yet England's net gain of births over deaths each year is half a million souls. Germany's net gain is 800,000. The United States and Russia will need all their own grain in the next 25 years. The total population of the whole world in 1890 was about 1,500,000,000. Today it is about 1,600,000,000. In view of this stupenduous fact the latter day hue and cry by some as to race suicide would be rather amusing, were it not for the portentous fact that the increase is largely among the baser classes of society.

But Malthus saw only half a truth, that of the constant increase of man. Herbert Spencer was the first to see the complement to this half truth and that is, that as man rises in the scale of intelligence, of civilization, the birth rate diminishes. The death rate also diminishes, due of course to the better sanitation, hygienic and medical relief and preservation of the infirm, etc. But the death rate necessarily cannot fall below a certain level. Now this lowered fertility among the higher civilized people is a scientific fact and no amount of vociferous alarums on the part of T. R. or any other preacher can alter the fact, unless a remedy can be found and applied. So there is in some measure an offset to the increasing population, but unfortunately it cuts off the increase among the very classes who most need, for the sake of the race, to perpetuate themselves.

Therefore has come to pass the new science of Eugenics, "which is the study of agencies under social control that may improve or impair the racial qualities of future generations either physically or mentally." It is the high hope of Francis Galton, the illustrious founder of Eugenics and of his devoted followers and ever increasing disciples to so educate public opinion that in due time the important laws of heredity may be freely applied, to the end that more and more may the fittest survive and that the propagation of the unfit, such as the insane, the feeble minded, the congenitally deaf and dumb, the habitual criminal and those enfeebled by the racial poisons (such as syphilis, alcohol and lead) shall, by the power of that public opinion cease from off the face of the earth by propagating no more.

I have taken this rather circuitous route for the consideration of my subject, because I desire to treat it from the biologic standpoint, rather than to review those important and excellent phases of environment, such as diet and hygiene and playgrounds and child labor, education and what not, which are now being so fully treated and are familiar to my hearers. The two great factors that enter into the welfare of the child are first: heredity and second, environment. Each from its own standpoint seems the more important.

I choose to consider the welfare of the child from the view point of heredity, because less usually treated of. Heredity and its laws have in the past been rather hazy, and there is still much to learn. About 40 years ago the Abbot Mendel, of Brun, Austria, in working with plants, discovered and enunciated certain laws of heredity which are known as Mendelian Laws. Modern biologists are diligently pursuing the trail the Abbot blazed and new discoveries are constantly being made; not only are these laws applicable among plant organisms, but they are proved of equal value among animals and man. We know of course that breeders of domestic animals have long been earnest students of heredity and hereditary laws.

Indeed Plato knew as much, so that in constructing his Utopia he desired to breed quality rather than quantity. In the fifth book of the Republic this dialog is apropos: "It is plain, then, that after this we must make marriages as sacred as possible; but the most advantageous should be the most sacred. By all means. How then shall they be most advantageous? Tell me that, Glauco, for I see in your houses dogs of chase, and a great many excellent birds? Have you then indeed ever attended at all, in any respect, to their marriages, and the propagation of their species? How? said he. First of all that, among these, though they be excellent themselves, are there not some who are most excellent? There are. Whether then do you breed from all of them alike, or are you careful to breed chiefly from the best? From the best. But how? From the youngest or from the oldest, or from those who are in their prime? From those in their prime. And if the breed be not of this kind you reckon that the race of birds and dogs greatly degenerates. I reckon so, replied he. And what think you as to horses, said I, and other animals? Is the case any otherwise in respect to these? That, said he, were absurd." So there you have it in a nut shell. And because Plato and Aristotle and Socrates and Praxiteles and all the host of their illustrious kind did not propagate themselves but left that to the baser classes, we have the Greece of today, and their Greece is but an illustrious memory. Many men of keen vision see the same doom for modern civilization, for "the most excellent" and "in their prime" are more and more becoming childless, while the lesser breeds are multiplying degenerates at the rate of four per cent. per annum. Only by arousing public sentiment, until the scientific truths of Eugenics can be applied will the inevitable decay of modern civilization be stayed.

We marvel at the wonders of the universe, but to my mind the most marvelous of all wonders is the wonder of creation of a new being by the fusing of two microscopical cells which are called the "germ-cells," the "germinal plasma" or the "race cells." To think that within these two microcosms are locked up all the mental, moral and physical qualities of the parents and their inherited qualities which in turn are potential in the newly created individual, who is born as a result of their union. Each parent contributes his or her own list of qualities. Some may be similar, some dissimilar; some present in one, lacking in the other, or lacking in both. According to Medelian laws, given the known characteristics of the parents, the qualities of the new being can be quite accurately foretold. The old idea of Lamarck that acquired qualities can be handed down or inherited, has been completed exploded. Only what is inherent in the germ-cells can be inherited, can be handed down to the new organism. Out of these will evolve the inherent character of the new individual. All the rest will depend on environment, with all which that may include. From the moment of conception, therefore, a new being has been launched into this universe, and all it needs is the proper enviornment in the way of shelter and food within and without the matrix to reach the stature of a Shakespeare or a Napoleon. What we call birth is simply a change of environment. The human child is nine months old when it is born. Every human being must add nine months to his age as usually recokoned. This being so the killing of that life while lying in its cradle—*intra utero*—is no whit less killing than if it were lying in its cradle—*extra utero*.

Many people are concerned for the welfare of the child during its prenatal existence. Let it be understood once for all that science gives no foundation for the popular belief in maternal impressions. There is not even any physical connection between mother and child. The child has its own blood and blood vessels through which it gets its nourishment and delivers its waste products to the blood of the mother, by osmosis. Whatever influences her nutrition, whether from physical, mental or spiritual causes, is of prime importance. Furthermore, whatever acquirements the parents may make or have made cannot, according to the laws of heredity, be transmitted. Rather a blessed fact this, for it enables every little babe to make practically a new start. The acquired good or bad habits, culture or illiteracy, or what not, affect it not in the least, by inheritance; only as these things play upon it during its post-uterine life. For this reason it is reckoned that at least 90 per cent. of the babies born even in the slums and among the lower classes are healthy, well endowed physically and mentally. But their terrible environments all too soon blot out the blessed image of the Creator which was stamped upon them at birth.

Nothing in all the history of the human race is so striking as the influence the child has had upon the sacred institution of the family. In fact the child has created the family. As Professor Westermarck has remarked, "Children are not the result of marriage, but marriage is the result of children." It was Professor John Fiske, I believe, who first called attention to the prolonged period of infancy in the human child. This makes necessary the care of the mother far beyond that required among any other animals whatever. Other animals are born with instinctive intelligence, full-armed to take their place in nature almost at once. But human children are not so born. The ability to suckle is about the only instinct ready made. Their intelligence is plastic and requires not only days but years for its full development. Therefore the necessity for the prolonged care of the mother, both for its physical and psychic needs. But for motherhood to reach its fullest measure of success, it must be devotion itself. How necessary, then, is fatherhood to support motherhood while engaged in her sacrificial duties. Hence the institution of marriage and the family. Westermarck, in his monumental work on the history of marriage, shows conclusively that the needs of the child have led to the choice of monogamy as having the greatest survival value for the child. It is the most prevailing form of marriage, even among savages and in polygamous countries. The facts are conclusive that while among polygamous people the birth rate is greater, infantile mortality is also greater than where monogamy is the rule, and right here is where the growing evil of divorce is dealing its foulest blow at modern organized society. It is destroying the welfare of the children involved, and whatever destroys the welfare of the child destroys the welfare of the race. Also in spite of the teachings of history and of science, that modern viper of the earth, mormonism, is being permitted to poison not only our own people, but 2,000 missionaries abroad are diligently proselyting for this polygamous monster. All would do well to read the articles running in several current magazines on this terrible danger to our American civilization. The viper has already struck his fangs into twelve states in which he holds the balance of political power. Aside from religious considerations, the menace to the welfare of our race is tremenduously real.

The welfare of the child is most intimately dependent upon the question of nutrition. For during intra-uterine life, poisons circulating in the blood of the mother may vitally damage the child's tissues and ruin its future welfare. Not only does the persistent use of alcohol or narcotic drugs during pregnancy so affect the child, but certain poisons, like alcohol, lead and the syphilitic virus even damage the germ-cells of the parents, so that at conception the new organism will inherit damaged qualities. These poisons are therefore called by Eugenists "racial poisons." In this light the alcohol problem becomes far more important than a mere quibbling as to "personal liberty." It becomes a problem of race welfare, and public opinion will some day rule against alcoholic poisoning from that broad standpoint. Alcoholics and syphilitics poison and damn their offspring at the very fount of life.

Again, how greatly does the welfare of the child depend upon its nutriment. Perhaps the most scandalous fact in all modern history among civilized nations, is the terrible mortality among infants. So much has been said upon this subject in late years that I will only dwell upon the importance of breast feeding for infants. Without question the greatest percentage of this mortality is due to bottle feeding. A breast fed infant has, according to its station in life, from three to twenty times as great a chance for its life, as the bottle fed baby. The campaign of education and agitation is already bearing fruit and we physicians, I believe, find mothers more willing and anxious to nurse their babies than formerly. Not only must we consider the loss of those who die, but the fact that many who live in spite of their hampered beginning, never attain to that vigor that is their's by right; and only live to perpetuate in due time another generation of children who have but little fitness to survive or to elevate the race.

In the course of the evolution of man an element entered which was entirely foreign and seemingly antagonistic to the doctrine of the "survival of the fittest" through the "struggle for existence." This is the introduction of the ethical nature in man. Even Huxley, in his lecture on "Evolution of Ethics" declared that, "The ethical progress of society depends, not on imitating the cosmic process, (that is, the selection of the fittest) still less running away from it, but in combating it." This ethical nature has developed more and more under the benign teachings of Christianity so that the blind, the lame, the halt, the feeble, the insane, the epileptics, the criminals, all are cared for and sheltered, and life prolonged by every skill of medical science, until indeed it does seem as if the cosmic process were soon to be reversed and we shall see the survival of the unfit. For sad to say these all are competent to perpetuate their kind and too much have they been allowed to have their way; better for these children never to have been born.

"On the other side of the Eugenists stand those whom we may call for short Nietzschians. They see one-half of the truth of natural selections; they see that through struggle and internecine war, species have hitherto maintained themselves or ascended. They declare that all improvement of the environment, or at any rate all humanitarian effort, tends to abrogate the struggle for existence, and even, as is too often true, to select unworth and let worth go to the wall. This school then declares that infant mortality is a blessing and charity an unmitigated curse. In short that we must go back as quickly as possible to the order of the beast."—*Seeleby.*

There is no inconsistency, however, in fighting simultaneously for the protection and care of all babies and all children without discrimination of any kind; and on the other hand, in declaring that, if the degeneration of the race is to be everted, still more if racial progress, which is the only sure progress, is to be attained, we must have the worthy and only the worthy to be parents of the future.

That this is not merely a dream, but becoming actualized in our own day could be shown, if I had time. Various states are making laws more closely guarding the entrance to marriage, with a view of preventing the least fit from propagating their kind. But the great need now is to shed public light upon these great Eugenic questions until public opinion—that most powerful of all influences—shall be so strongly arrayed against the forces that make for degeneration, that the torch of life may be handed on to an ever increasing host of children who are well born.

THE ONLY CHILD.

BY

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It seems strange that attention is not oftener called by pediatrists to what might be termed the pathology of the only child. Perhaps there is no one who has worked among diseases of children who has not been forcibly struck by the fact that where there is only one child in the family it is more liable to disease, especially certain forms of disease, than when there are several children in the family. The same is true of what might be called the favorite child, which is usually a boy if the remainder of the children are girls, or vice versa, or it sometimes happens that a child who is weakly or the subject of some chronic disease becomes the favorite. This last class of children is really not to be considered in the subject under discussion.

The only articles in the literature with which I am familiar are those in the German. Neter (*Das einzige Kind und seine Erziehung*) has written a special monograph on this subject. The child in question is usually what might be termed a spoiled child, one who has received the love and care intended for five or six, with the correction and admonition for one child, or often only a small fraction of this. One of the German poets has a verse on the subject of the only child to the point that if he had received the punishments intended for five or six children as well as the affection, the result would probably be very satisfactory.

The first point concerning these children is that most of them are nervous. Friedjung (*Wiener Medicinische Wochenschrift*, February 4, 1911, p. 375) has made a study of 100 such children and only 13, six boys and seven girls were what would be termed healthy children and all of the others were more or less neuropathic. He also made a study of the same number of children where there were two or more in the family and of these 69 were what would be termed normal children, while 31 were more or less nervous. In addition to being nervous there are certain somatic symptoms which are very striking. These children are usually weaker than the average child of the same age and social standing. The nutrition is poor, they are more or less anemic, and may be described as pale, thin, nervous looking individuals. The other symptoms are referable to the digestive tract. The most striking of all symptoms is the loss of appetite, the child refuses its food or has a capricious appetite, and one of the most troublesome features in connection with the treatment of these children is in getting them to take sufficient nourishment. This symptom is often aggravated by the well-meant, but misdirected efforts of the various members of the family or servants in trying to amuse the child while he is being fed. These diversions often take such extreme forms, that were it not for the pathetic side, they might be regarded in a most humerous light. Not only has the child a poor appetite, but not infrequently vomits the food which it has taken. This is sometimes simply regurgitation of the food into the mouth and at others vomiting in the ordinary sense of the word. Intestinal indigestion is not infrequent and as a rule the child suffers with constipation. Another symptom which is very noticeable, and is especially frequent in boys is frequent urination. The total amount of urine in 24 hours is not increased, but the urine is voided frequently, and I have known instances in which the child has passed urine six or eight times an hour.

In addition to the above mentioned symptoms, there are certain psychic disturbances amongst the most noticeable of which perhaps is restlessness. This is seen both during the day and night, particularly the latter. It is present in various forms, from what the mother refers to as "the child sleeping all over the bed" up to actual night terrors. The nervous system is unstable and the child is more prone to be upset particularly over not having his own way and is very apt to be disagreeable if crossed in any desire. In many of these children there are various fears which condition varies greatly and is probably partly accounted for by the child associating too much with grown people who threaten it with all sorts of imaginable terrors if it is not good. Nurses are often responsible for this by the character of stories which they tell to amuse the children. The commonest of these fears is the dread of being alone, and the dread of going to sleep alone, but there are others too numerous to mention. Friedjung found a large number of the only children to be affected with awkwardness, but this I have not found to be the case with American children, except in so far as a child of understrength is more or less awkward in games which require skill and endurance. The intellect in most of these children develops too rapidly and it is not uncommon to see children who have a knowledge of all sorts of things far beyond their years, or they may be decidedly backward when it comes to the question of judgment and self-reliance. Many of these children have everything decided for them and are so constantly attended by older persons that the lack of initiative is a striking contrast to the knowledge of things which they possess, it being particularly noticeable when the child is out of its usual surroundings.

These children are actually ill oftener than are children in families where there are several. This is very apparently so on account of the physician being called oftener for trivial ailments. The character of the various illnesses often varies, not infrequently any disease being more severe or manifesting itself in some more or less atypical way. Numerous nervous symptoms present themselves partly, perhaps because the child has been taught to be introspective, and, as its symptoms are discussed before it with such frequency that it is more conscious of things and able to describe them better than other children.

The physical examination of these children is often attended with great difficulties as they often object to any examination whatever being made. It may be difficult to elicit either symptoms or physical signs of disease. The treatment of these children is also extremely difficult. Much can be accomplished by securing a competent and reliable nurse, but often this is not possible and the combination of a nervous mother, very often a nervous father and the nervous child makes an extremely difficult combination to handle. The problem often solves itself with the birth of another child, but in many instances the patience and ingenuity of the physician are sorely taxed. In the severer forms of nervous troubles the best method of treatment is to send the child away from its family with a competent nurse. When possible the child should be sent to a farm and allowed to live a normal, outdoor existence. During this period of treatment the family and friends should not be allowed to visit the child and very little can be accomplished which will be permanent under four months or longer. Often remarkably good results are obtained earlier, but the child falls back into its old ways very quickly on being returned to its accustomed environment. In other instances removal to the ward of a children's hospital will work wonders, as there is perhaps no quicker way in which to teach the child that there are other individuals in the world who have feelings and who need to be considered. Loss of appetite may be at times a serious feature, while interfering as it does with nutrition, and it is often difficult to treat. As a general rule the child should be given its meals at regular times and if the food is refused, should be allowed to go until the next feeding time. Nothing whatever should be given between meals in these cases. As a rule such hildren should take their meals alone and away from the other members of the family, but the companionship of children of about the same age is very helpful, particularly if the other children have the healthy normal appetites of childhood. Snow has suggested in the severer cases to put the child to bed under a very strict regime. The child should be under the care of a nurse who is a stranger to it, and in certain instances the anorexia may be successfully overcome in this manner. With older children a term or two at a boarding school is often the most beneficial thing that can be done.

The physical development can be aided very much by active games and exercises, and an effort should be made to have the child play with other children of about the same age. Exercise indulged in particularly out of doors and with zest does infinitely more good than a set of tiresome gymnastic exercises taken alone under the supervision of an often unsympathetic instructor. Perhaps the solution of the problem is best summed up in the statement to allow the child to have the companionship of children of its own age as much as possible.

CEREBRO-SPINAL MENINGITIS.

BY

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This is an infectious disease occurring in sporodic and epidemic form, and characterized by inflammation of the brain and spinal cord membranes.

No authentic history of the disease dates farther back than to the time when it occurred in Geneva in the year 1805. Sir John Pringall, in his work on diseases in the army, describes a malady in 1752, which resembles, and undoubtedly was, cerebro-spinal meningitis.

It appeared as an epidemic in this country at Medford, Mass., in 1806, in Canada in 1807, and again in 1808 in Virginia, Kentucky and Ohio.

It raged with considerable virulence in nearly all the countries of Europe from 1814 to 1868.

Again in this country it was especially severe in Philadelphia and throughout the State of Pennsylvania from 1863 to 1865.

The number of deaths as complied by Stille and William Pepper in Philadelphia from 1865 to 1891 was 2575.

Epidemics occurred in New York in 1893, in Maryland in 1892, and in Boston in 1897.

In North America during the last few years, widely distributed epidemics have been observed.

In several of the large cities it has found its way, gained a foothold and thus become almost endemic.

With the great activity of travel between the old world and the new, there can be no doubt that the disease has been carried from one part of the world to the other.

The appearance of many epidemics in the North German cities and in Copenhagen, seem to indicate that it might have been taken there from North America.

Up to the present time the disease seems to be limited to certain districts in cities. In the military population the epidemic seems to be confined to certain distinct parts of garrisons, and in distinct rooms of garrisons.

It may occur at any season, but it is much more frequent during the winter and spring months. Epidemic cerebro-spinal meningitis is a disease of childhood and youth. After the 40th year its occurrence is rare.

In regard to the etiology, the investigations of Weichselbaum and Jaegar have proven that the disease is due to a specific micro-organism, which was frequently found within the cells, and to which Weichselbaum gave the name of diplococcus intercelularis meningitidis but now more frequently termed the meningococcus.

Professor Koch has specified three requirements which a bacterium must possess to be regarded with absolute certainty as the causation agency of an infectious disease. First the organism must invariably be found present in the infectious disease. Second, it must be successfully obtained from the product of the disease artificially and in pure cultures. Third, a transmission of pure cultures in animals must produce the same anatomical and clinical changes as are peculiar to the infectious disease in man.

In regard to the meningococcus, all these requirements have been fulfilled. Although other germs have in many cases been found in connection with this specific micro-organism, yet within the last few years, the reports correspond more and more that in epidemic cerebto-spinal meningitis the meningococcus has been found with great regularity.

Huebuer performed lumbar puncture in fourteen cases, and found the meningococcus in eight. Febringer punctured the sub-arachnoid space in ten cases and found it in every case.

In Boston the same regularity was found as in Berlin. In lumbar puncture, Osler found it in twelve cases out of fourteen. Councilman, Mallory and Wright found the specific micro-organism in thirty-three out of thirty-five autopsies.

Pfoundler detected it in every case of lumbar puncture.

Mixed infection is found in several cases such as the streptococcus, the pneumococcus and several other varieties.

The meningococci retain the power of life for a long time. Jaegar found that meningeal pus, when dried upon cotton and retained in petri dishes for 127 days, still retained meningococci capable of development.

Sometimes a slight touch is sufficient to convey the disease.

So in epidemic form, personal intercourse is very likely to a spread of the disease.

In regard to the pathology, the anatomical changes are quite obvious in the membranes of the brain and spinal cord. The dura mater is tense, surfaces dry and sinus filled with blood. Veins of the pia mater are filled with dark blood, and the entire surface presents a reddened appearance. In some of the more advanced cases, the entire superficial surface is covered with pus. On the removal of the brain it may be found that in the whole lower posterior cavities of the skull, there is a turbid purulent fluid.

The basal cerebral sinuses contain coagulated blood. The fluid of the ventricles shows a turbid purulent infiltration.

The changes in the cord are similar to those in the brain. In the lower part of the cord there is often found the same turbid purulent fluid.

Microscopic examination of the diseased tissues should be made to detect the meningococcus, if none have been found in the cerebro-spinal fluid.

There is often in advanced cases granular opacity, fatty and even granular degeneration of the heart muscles and of the voluntary muscles.

The time between the infection and first symptoms of the disease is not accurately known, but it is quite evident, in a large proportion of the cases, that the incubation period is only a few days.

The symptoms are various, as several forms of the disease exist, such as the mild, the ordinary, the abortive, the malignant and the chronic.

In the ordinary form the time of incubation being uncertain, the first symptoms often are pain in the head, neck and back, accompanied by vertigo. Often the onset is very sudden, with a decided chill and projectile vomiting. Sometimes the pain is mild in character, but in a large number of cases it is so severe as to cause rigidity of the muscles, and the slightest motion to greatly intensify the pain.

As the disease progresses, the muscles of the neck and back become rigid.

In children there are often spasms and convulsions. Paralysis of the face and eye muscles may occur, causing ptosis diplopia and strabismus. Diplopia, or double vision, as well as strabismus, should make us suspicious of the nature of the disease.

Herpes labialis frequently occurs from the third to the sixth day. Meningococci are rarely found in the vesicles.

Bronchitis is quite common. The pulse rate is in very many cases quite slow in comparison with the rise in temperature. The urine frequently contains albumin, but is generally, in spite of the fever, voided in large quantity and is light in color.

Kernig's sign is frequently present, but not in all cases. This sign, briefly stated is, that if the patient be placed on the side with legs flexed on thighs and thighs on abdomen, any attempt to straighten thighs and legs will cause intense pain.

We may have very mild forms, and in course of epidemics some abortive forms. Other cases may be so severe and the onset so sudden as to cause death within twelve or twenty-four hours. On the other hand there have been many chronic cases continuing for weeks and even months.

In a large proportion of cases death has resulted by the end of the first week.

The diagnosis clinically is not always easy. Tubercular meningitis is usually accompanied by tubercular conditions in other organs, runs a slow course with low fever, whereas the purulent specific form begins suddenly and runs its course more rapidly, frequently attacking the robust and healthy.

Whether a case is of tubercular, meningococcic, or other form of meningitis can be determined accurately only by a bacteriologic examination; for as previously stated other forms of bacteria may be a cause.

But by means of lumbar puncture, drawing off some of the cerebro-spinal fluid, and by making a bacteriological examination of the same, we have an indispensable aid to a positive diagnosis. With due care and practice lumbar puncture is almost a harmless process. Under most careful and experienced operators the fluid is not always obtained for the reason that the fluid is not always under the influence of sufficient pressure.

In tubercular meningitis the fluid is clear and often there is only a veil-like coagulum. But in meningococcic meningitis the fluid except at the very beginning of the disease is usually turbid, floculent and may be very purulent. The pus in meningococcic fluid is frequently noted on the smear preparations on cover glasses.

The finding of meningococci would be decisive, but there may be with those some or several of the other forms of bacteria.

The prognosis, previous to serum treatment, has always been exceedingly grave.

Different epidemics have given a various death rate but the average without serum therapy, has been from 75 to 80 per cent.

When there is marked pressure on the cranium, coma and quickened pulse, with paralysis, the conditions are extremely unfavorable.

The treatment should be supportive. Milk diet seems best. Ice bags to head and spine may be indicated.

Anodynes are to be used sufficiently to control, or at least to modify the intense pain. Morphine subcutaneously is most effective.

Now we believe without doubt, that medical research has achieved another signal victory in discovering and placing at our disposal one of the most effective agents yet known for the cure of this most dreaded and most fatal of all diseases. After long and patient research by Dr. Simon Flexner and his co-laborers, at the Rockefeller Institute for Medical Research, there has been given to the world a method of treatment for cerebro-spinal meningitis, which, after several years of application, in a large number of cases of all ages, and of all grades of severity, has reduced the death rate in this disease from 75 or 80 per cent., to about 25 or 30 per cent.

This remedy is termed the anti-meningococcic serum, which is to be injected into the cerebro-spinal fluid, after lumbar puncture has been performed and an equal or greater quantity of the fluid withdrawn for bacteriologic investigation and diagnostic purposes.

The preparation of the serum can best be described in the words of Dr. Flexner himself as follows:

"Horses are employed for preparing the serum for the treatment of epidemic cerebro-spinal meningitis in man. Cultures of diplococcus intercellularis and an autolysate prepared from the cultures are injected alternately. The diplococcus is grown on large flat surfaces in flasks of about half a liter capacity on a medium composed of beef infusion of agar-agar, containing two per cent. of glucose. The cultures, of which many different strains are used when employed for injection, or for preparing the autolysate, should have been incubated at 37 degrees C., for 24 hours. The cultures for injection are suspended in normal sterile saline solution. The autolysate is prepared by pouring over the surface of the growth 10 to 20 cc., of sterile normal salt solution, to which is added afterward about one per cent. of toluol. By gently agitating the flask from side to side the toluol and salt solution are mixed and the cultures separated in part from the medium. The flask is returned to the thermost where it is allowed to remain for another 24 hours, during which time the toluol has evaporated. The resulting fluid remaining contains no diplococci but some granular debris and a solution of the micro-organisms. This fluid autolysate is subjected to centrifugalisation, or is employed for injection without further treatment.

"Placed in sterile flasks, it can be kept for purposes of immunization for several weeks in the refrigerator.

"The destruction of the diplococci is effected through the agency of the active autolytic ferment.

"The practical operation of immunization of horses is carried out by the employment of cultures of the meningococcus killed by heat at 60 degrees. C., or in the living state, which are injected alternately with the autolysate. The injections are made once a week into the subcutaneous tissues.

"Owing to the severe action of the cultures and the autolysate upon the organs of circulation, the employment of intervenous injections is very dangerous, and does not produce a more potent anti-serum.

"The subcutaneous injections should be made at several separate places at each operation, so as to extend the area of anti-body formation in the tissues, and to reduce the intensity of the local reactions.

"The doses at first should not be too large, since it is desirable to prevent too severe local reactions and high rise in temperature. The usual temperature observed on the day following the inoculations varies from 39 to 39.6 C., and is maintained for one day.

"The local swelling which may extend from the shoulder to the knee, sets in after a few hours, reaches its height in 48 hours or less, and disappears usually in a few days.

"The larger inoculations especially of living cultures, may lead to the production of sterile abscesses.

"Beginning with a fraction of a flask of the cultures and a corresponding amount of the autolysate, the quantity may be increased gradually until ultimately the contents of many flasks may be given at a single inoculat on.

"During the first month or two it is advisable to use killed cultures and after that the living ones to alternate with the autolysate.

"When the period of bleeding has arrived, the inoculations are made at the proper intervals to alternate with the bleeding. It is advisable to continue the process of immunization from four to six months before beginning to collect serum for therapeutic use.

"The precise period at which the collection of serum can begin will depend upon the rapidity with which the immunity principles are developed.

"This is determined by the standardization of the serum."

The use of the serum is indicated in all forms of meningococcic infection, but its special use is in epidemic cerebro-spinal meningitis. In regard to the manner of administering, Flexner says that the serum passes very poorly from the blood into the spinal fluid, and even if it passed readily, the high degree of dilution which it suffers in the blood would prevent its accumulation in the meninges in a high state of concentration. The anti-serum is readily injected into the subdural space, and that there is little danger of undue pressure, especially as a portion of the fluid is withdrawn generally before injection is made. And that should no fluid be found on lumbar puncture, it will still be safe to make subdural injection. And that should unfavorable symptoms develop, it is advisable to remove, by lumbar puncture or suction, a part or all of the fluid injected.

Lumbar puncture is performed according to the method of Quinque as described in the German Clinic, in the following manner:

The patient is placed on the left side with knees drawn up and chin approaching knees so as to lengthen, as much as possible, the intervestebral spaces.

Needles of varying sizes should be used according to size of body and thickness of soft parts.

Of course all needles, skin of patient, hands of operator and everything that comes in contact should be thoroughly sterilized.

The needle should be introduced between the third and fourth or fourth and fifth lumbar vertebrae. When the dural sac is reached and the fluid begins to flow from the canula, a hollow metal cone should be attached to the needle and this to a narrow rubber tube with a glass tube at its end. As soon as the fluid flows, this glass tube is held to such a height as that the fluid column is in equilibrium.

This perpendicular height from the point of puncture denotes the amount of pressure. Then the glass tube is lowered 10 to 20 mm. below the height of pressure, so that the fluid may drop slowly into a graduated cylinder. Then the needle is withdrawn and the point of puncture closed.

Anaesthesia is not generally necessary except in rare cases of mania or spasm.

When lumbar puncture is made for the purpose of injecting the serum the same amount of fluid should be withdrawn as the amount of serum to be injected.

The opening is closed preferably with colodion and a cotton bandage.

Dr. Flexner says that the evidence at hand indicates that the earlier in the course of the disease the serum is injected, the better are the results.

A safe rule is to inject at once if there is a suspicion of meningococcic infection, without waiting for bacteriologic diagnosis by film preparations, or by culture.

The occurrence of a turbid or purulent fluid at lumbar puncture should call for immediate injection.

Exploratory puncture will show sometimes clear and sometimes turbid fluid. Immediate injections in these cases, often cut short the disease as shown by Bradley and Netter. Much emphasis should be placed on lumbar puncture for diagnosis.

Experience has shown that it is not safe to rely upon the gross appearance of the fluid to detect the existence or non-existence of infection of the meninges.

Recent observations leave no doubt, that in the earlier stages of infection, a clear fluid may be obtained, although 24 to 48 hours later in the same cases, the fluid may have been turbid or even purulent. Every effort should be made to inject the serum early, as experience has shown that many, if not all, of these cases may be aborted.

Flexner gives as a minimum dose for a single injection 15 to 45 cc., except with infants, in whom the dose may be smaller. He says that it is generally necessary to give more than one injection although sometimes there is marked improvement after the first dose, and complete recovery takes place.

But the rule is to give repeated doses as required, to bring about favorable conditions, and to establish them on a permanent basis.

The arbitrary rule is the plan of a daily injection for three or four days; but as Flexner says, it is imperative to control the injections by observations on the appearance of the cerebrospinal fluid, and particularly, whether it becomes clearer day by day, and the meningococci grow less and less and disappear altogether.

In fulminant cases he says it is better to make two injections of maximal doses within the first 24 hours, and possibly in the next 24 hours.

Dochez has determined by estimating quantitatively the anti-proteolythic ferment in the anti-serum, that serum injected has a tendency to leave the meninges within 24 hours of the time of its introduction.

It is reported that the chronic forms are most unlikely to respond to serum treatment, yet in some chronic cases, benefit was quickly noted and convalescence followed rapidly.

There is unanimity in the opinion that subcutaneous injections are of no benefit, but that the subdural method lessens the fatality, shortens the course and reduces the sequellae.

Proceeding now to analyze some reported cases, we present the following tables for comparisons as to percentages of mortality and other considerations:

TABLE I.

By whom reported	Number of serum treatment cases,	Per cent. of mortality	Per cent. of mortality in cases non-serum treated.
Dunn	40	22.5	70
Chase & Hunt	12	25	90
Sladen	23	16	64
Fulton	22	31	78.4
Koplick	15	13.3	60
Robb	90	30	75
Ker	30	43	80
Krohne	59	40.6	66
Schoene	30	27	53
Leoy	23	21.7	78
Tobben	29	34	56
Netter	50	18	83

This table represents a series of cases treated with the antimeningitis serum and the percentage of mortality as compared with those cases occurring in the same places and at the same time but non-serum treated.

We find that the average per cent. in serum treated to be about 27, while the average per cent. of mortality in the non-serum treated cases is about 71.

It will be seen that these reports were from investigators and physicians in this country and abroad.

TABLE II.

Ages	No. of cases	recovered	Died	Per cent. mortality.
1 to 2 years	104	60	44	42.3
2 to 5	112	82	30	26.7
5 to 10	113	95	18	15.9
10 to 15	101	73	28	27.7
15 to 20	107	72	35	32.7
20 and over	175	106	69	39.4
Totals	712	488	224	31.4

Table two represents Flexner's 712 serum treated cases, analyzed according to groups at different ages. This is interesting as showing that the highest mortality 42.3 per cent. occurred in children from one to two years of age, while the next highest mortality 39.4 per cent. was among those whose ages were more than twenty years. Also that the lowest mortality 15.9 per cent. was among those whose ages were between five and ten years.

Table three is a report of the same 712 cases arranged in groups representing the time from the first of the disease, at which the serum began to be administered.

TABLE III.

	First to third day			Fourth to seventh day		
Ages at period of injection.	Recovered	Died	Per cent. mortality	Recovered	Died	Per cent mortality
1 to 2 years	16	1	5.8	22	10	31.2
2 to 5	24	6	20.0	40	12	23.0
5 to 10	43	8	15.6	35	6	14.6
10 to 15	36	8	19.0	23	9	28.1
15 to 20	25	17	40.4	25	8	24.2
20 & over	36	21	36.8	34	24	41.3
Totals	180	61	25.3	179	69	27.8

Later than seventh day.

Ages at period of injection	Recovered	Died	Per cent mortality
1 to 2 years	22	33	60.0
2 to 5	18	12	40.0
5 to 10	17	4	19.0
10 to 15	14	11	40.0
15 to 20	22	10	31.2
20 & over	36	24	40.0
Totals	129	94	42.1

This is exceedingly interesting as showing that when the serum was used between the first and third day, in children from one to two years of age, the per cent. of mortality was only 5.8 in 17 cases compared.

It also shows that the per cent. of mortality of all ages in this group of early treatment was only 25.3.

In the next group when the serum was employed between the fourth and seventh days, we note that the per cent. of mortality in children from one to two years, has crawled up to 31.2, and that the per cent. of mortality of all ages is 27.8.

In the last group in which the serum was employed later than the seventh day, we note that the per cent. of mortality has reached the high water mark of 60, and that the per cent. mortality of all ages in the group is 42.1.

These figures and comparisons teach us the absolute necessity of early recognition of the disease and of early serum treatment, especially in children.

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ATYPICAL SCARLET FEVER WITH REPORT OF CASE.

BY
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Since the discovery of anti-toxin and the brilliant clinical results following its use in diphtheria, scarlet fever is the most dreaded disease incident to childhood. This is due as much to the mild atypical case as to the severe cases, for while in the latter the lack of any specific treatment may result in the death of the patient, yet its influence is usually confined to that one patient. On the other hand, it is frequently the mild atypical case that is responsible for an epidemic, which, notwithstanding its mild origin, may be characterized by the disease in its severest form. The severe case alarms the mother, who, immediately sends for her physician, who, in turn, has no difficulty in making a correct diagnosis and instituting the proper precautionary measures. The mild case, however, may not be considered of sufficient importance to necessitate sending for a physician and even should this be done he tells the mother the flush is due to the slight fever present; or to the quinine she has already given for the fever; or that the indistinct rash is due to a disordered stomach, the coated tongue to an inactive liver, the angina to a simple tonsillitis, etc. This is not said in criticism of the physician in question, for a correct diagnosis would not have been made in the case to be reported, had it not been for the fact, that it occurred during an epidemic of scarlet fever. It is just here the danger lies. For at times there is practically nothing to base a diagnosis on until the disease has assumed the proportions of an epidemic with some severe or even fatal cases.

Obviously, the difficulty lies in making a diagnosis, for as yet, there is no one sign or combination of symptoms invariably present in all cases. Scarlet fever occurs without the initial vomiting, the temperature, angina, and rash. In fact, at times, the diagnosis is possible only after a typical case has developed as a result of exposure to an unrecognized case.

In a series of ten cases the most constant and characteristic symptoms were the initial vomiting and the strawberry tongue which occurred in all cases, and the most characteristic thing about the tongue was the rapidity of change. The heavy, white coating is seen in other conditions as is the red, raw tongue, but in no other disease does the change from the one to the other take place in so short a time. This change usually takes place in twelve hours and is to me the most characteristic symptom of the very mild cases. Fever was present in all cases but one, as was the rash, but the latter in several cases was anything but typical. Angina was absent in three cases, but the pharynx was injected to a varying degree in all cases but one. Desquamation was fairly typical in all cases but one, while the lymph nodes was involved in all cases but the three in which there was no angina. Albumen was present in three cases, but did not persist during the convalesence while otitis media was absent in all cases. In this series the cases which exhibited all of the characteristic symptoms ran the severest course although this is not invariably true.

The usual mild case of scarlet fever is characterized by its sudden onset, initial vomiting and temperature ranging from 100 degrees F. to 103 degrees F. The pharynx is reddened and congested while the tonsils may be enlarged. The hard palate shows a punctate redness resembling the skin eruption. The tongue is heavily coated through which coating the enlarged papillae may be seen and usually some angina is present. The rash occurs within twenty-four hours and shows as a punctate redness upon the general cutaneous surface which is injected to the extent that it resembles a rather decided blush. The rash is more decided on the body than the face, appearing first on the neck and chest. In the very mild cases where the rash is scarcely perceptible it is usually most marked on the inner side of the thighs, the axilla and groin. The pulse is generally accelerated to a greater degree than the temperature would indicate.

By the second day the picture is practically unchanged with the exception of the tongue which has lost its dense, white, felt-like coating and is raw and red with the enlarged papillae showing prominently. This is usually accomplished in twelve hours from the time the change begins. The temperature reaches its highest point in from thirty-six to forty-eight hours and by the fifth or sixth day is normal. The rash begins to fade on the third or fourth day and by the fifth or sixth day may have disappeared, while desquamation begins about the end of the first week. Desquamation may be so slight as to pass unnoticed in exceptional cases. Usually, however, it is one of the most striking symptoms and at times may be the first symptom to attract attention. However slight it may be over the rest of the body it is usually characteristic over the hands and feet. In the mild cases it is several weeks before desquamation is complete.

The angina is not, as a general rule, of much severity and the involvment of the lymph nodes is then proportionate to the angina.

Otitis media and nephritis may follow the mildest case of scarlet fever. The ears should be examined as frequently and the urinalysis made as often during the mildest attack as during the severest.

The case of G. S., a girl twelve years of age illustrates how mild an atypical case of scarlet fevermay be at times. The onset was sudden, characterized by initial vomiting, a slightly accelerated pulse and a faint blush over the body and face. The mother thinking she had some temperature gave a cathartic pill and a dose of quinine. I was called in the next morning and found the patient very comfortable and rebellious against being confined to the bed. There had been no repetition of the vomiting, the faint flush was scarcely perceptible, was evenly distributed over the body and face and not punctate in character, the pulse slightly accelerated, the temperature normal, the tongue coated white with no enlarged papillae showing through. The pharynx was not injected and no angina or enlarged lymph nodes. An examination of the urine showed no albumen.

The second day the condition was unchanged except the tongue had lost its white coating, was red and upon very close examination showed the papillae slightly enlarged. The appearance however, would not usually have excited attention. This change in tongue occurred in twelve hours time and the disappearance of the coating was complete. The temperature was still normal and the patient insisted that she never felt better in her life. A diagnosis of scarlet fever was made and the house quarantined.

On the third day the flush had disappeared but having been so slight very little change in the appearance of the patient was noticed. The temperature was normal and remained so throughout the course of the disease. Daily examination of the throat, ear and urine failed to detect anything abnormal.

At the end of seven days desquamation was seen on the tips of the fingers, but the most careful scrutiny failed to detect this process over any other portion of the body. The dead epidermis came off in such small flakes that it could very easily have been overlooked. Throughout the course of the disease, with the exception of the initial vomiting the patient was comfortable, cheerful, slept well, had a good appetite and seemed to suffer from no constitutional symptoms.

Quarantine was strictly maintained toward the public and also the members of the household except a child three years old. The mother was nursing the case and not being satisfied in her own mind as to the diagnosis continued to get this younger child to sleep. She took the precaution to change her clothing and used an antiseptic solution on her face, hands and hair. However, there was some defect in her "technique" for on the seventh day, this younger child developed a typical case of scarlet fever which ran the usual course.

This case occurring during an epidemic of the disease was recognized because each symptom was carefully observed as being a possible symptom of scarlet fever. Had it come at any other time it probably would have been unrecognized and would have furnished a starting point of an epidemic.

The same care should be exercised in the quarantine and treatment of the mild forms of scarlet fever as in the more severe type. The patient should be put in a room from which all unnecessary furniture, rugs, carpets, curtains and books have been removed. Free ventilation should be secured at all times for the danger of catching cold is due to the lack of ventilation rather than to too much fresh air. The temperature of the room is kept at one thing and sudden changes or exposure of the patient are avoided as far as possible.

In the beginning of an attack, calomel followed by a saline should be given and the bowels kept open throughout the course of the disease. If there is enough temperature, insomnia or restlessness to demand attention small doses of phenacetine and dovers powders are indicated. The angina whether mild or severe is treated by first spraying the throat with hydrogen peroxide, then an alkaline antiseptic solution and finally painted with a 25 per cent. solution of argryol in glycerine. This should be done at least three times a day until all signs of inflammation have disappeared. The nose is also sprayed three times a day with an alkaline antiseptic solution whether there is evidence of rhinitis or not. As a further precaution against otitis media it is my custom to give urotropin four times a day. During the first few days the itching may be relieved by the use of a mild carbolic acid wash. After the fever and eruption have subsided a sanitary bath should be given daily followed by inunctions over the entire body with lanolin and vaseline, equal parts or carbolized vaseline.

The diet consists of milk, cereals, pea soup, bean soup and fruit. Cocoa is also allowed, as is lemonade and grape juice, to which an alkaline water has been added. This holds good for the well nourished patient. In a delicate, poorly nourished child, a more generous diet is allowed, in which, meat is included regardless of the danger of nephritis. The heart is closely watched and at the first signs of a flagging pulse strychnine and whiskey are given.

During desquamation the patient may be furnished with a paper bag as a receptacle for the dead epidermis, since most children are interested in assisting the peeling process; and burning this removes one source of trouble in effective fumigation.

The patient should be kept in bed for at least one week after the temperature is normal and the liquid diet is persisted in for several weeks longer. The mildest cases are quarantined for four weeks. Quarantine is invariably maintained until all desquamation, otitis, rhinitis or pharyngitis have subsided regardless of the length of time. A safe plan to follow is not to allow the patient to come in contact with other children until a month after the symptoms have disappeared. Before the patient is allowed to leave his room he is given a thorough scrubbing with soap and water, special attention being paid to the scalp and four disinfectant baths are given. He is then wrapped in a blanket at the door of the room occupied and carried to a separate room where fresh clothing is provided. These details are mentioned for the reason that the same care and precautionary measures should be observed in the mildest case as faithfully as in the most severe.

During the course of the disease a daily examination of the urine should be made. After the patient is well this should be done once a week for at least eight weeks, since, at times, the appearance of nephritis is delayed. During convalesence, iron and styrchnine in tonic doses are given, for at times, even in the mildest cases, a rather pronounced anemia is present.

Moser's serum treatment has not been mentioned for the reason that this serum is not yet available to the general practitioner. Those who have used it claim that it is as specific in scarlet fever as anti-toxin is in diphtheria. The only objection to its use, urged so far, is that such large doses are required, that the danger from serum disease is greater than the relatively smaller doses of the anti-toxin. For this reason it is advised only in severe cases.

TONSILLITIS.

BY

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Of late the tonsils are assuming more importance. We no longer look upon tonsillitis as a troublesome affection of minor significance like coryza, to be endured by children periodically, and occasionally requiring the attention of a doctor. It is now understood that every inflammation of the throat offers opportunity to any stray brood of diphtheria bacilli wandering in search of a location. The vital resistance of this structure is low at all times, and if further weakened by any disease the work of effecting a lodgment is easy.

The next observation connected attacks of rheumatism with precedent tonsillar inflammations. The observed phenomena apply closely to the hypothesis, that rheumatism is attributable to micro-organisms that settle on the tonsils, inducing an inflammation that may be superficial, or penetrate into the crypts and set up suppurative foci; in either case reaching the stomach and duodenum, where a secondary lodgment is effected, inducing fermentation and producing acids which, absorbed into the blood, in due course causes the affection in the fibrous tissues about the joints, and the constitutional symptoms of rheumatism.

If this is in accordance with the facts and not a mere schematic outline, the question arises: why should not other maladies be thus initiated by tonsillar invasions? It is unlikely that the vulnerability of the tonsils relates solely to the two micro-organisms responsible for diphtheria and rheumatism. Observations are needed on the incidence of tonsillar and of naso-pharyngeal inflammations, preceding other constitutional maladies and gastro-intestinal affections.

In the meantime we are justified in urging that more attention be paid to all tonsillar and naso-pharyngeal attacks, and that prompt and effective measures be taken to jugulate them at the beginning. Parents should be taught to look upon the throat as an open door, through which many diseases may find access to the system. Allusion to the highly dangerous nature of maladies localized in this region, such as croup and diphtheria, may serve to arrest their attention and make them realize the importance of the advice. Those who are liable to recurrent attacks of tonsillitis need no such emphasis.

The treatment is best comprehended by looking upon every inflammation of these structures, every "sore throat," pharyngitis, exudation, swelling, as a microbic attack. All such are primarily superficial, and a few applications of any effective germicide stops the infection in its incipiency. Last night the writer awoke with burning and itching in the soft palate. He at once took a teaspoonful of chlorine water, and inhaled the fumes arising from a vial of formalin, until it made him sneeze, and the trouble was ended.

It has been nearly forty years since I first began to employ chlorine water in these throat affections; and while I have tried many other local applications I have yet to find any other as satisfactory. Unpleasant to the taste it certainly is, and yet I have seen little children, grappling with malignant diphtheria, support themselves on their elbows and beg for the dose, to relieve the intolerable burning from the poisonous discharge. A little tact will induce any child to take the remedy; and in face of the perils it obviates, the question of taste becomes of trifling moment.

Make the solution yourself. For some incomprehensible reason not one druggist in six prepares it properly. Put in a four-ounce vial one dram of powdered potassium chlorate, add a dram of hydrochloric acid, U. S. P., not the dilute, and as the vial fills with chlorine fumes, fill it up with water. Use a clear white glass vial, and as soon as the chlorine color disappears throw out what remains and make up a fresh bottle. Of this, let adult or child take half to one teaspoonful every one or two hours. Take it undiluted, and take no water after it, but a drink before each dose that it may be diluted in the stomach. The bad taste and burning cease very quickly. After two or three doses the burning does not occur, because the soreness occasioned by the disease has ceased, the microbes are dead, the inflammation they were inducing has been stopped. In many instances, where patients were subject to periodic attacks of quinsy, the disease was prevented by keeping a bottle of this chlorine water in the house, and applying it whenever there was the least sign of tonsillar irritation.

If the microbes have penetrated the tissues of the tonsils, beyond the reach of local germicides, the problem is altered. We have then to break up the beginning suppuration by other means. Of old, men used "quinsy balls," globes of impure niter which were sucked. MacKenzie popularized troches of guaiac resin. Hare advocates sodium salicylate in doses of five grains every one to three hours. Quinine in doses of ten to twenty grains has been lauded. Raspail advocates full doses of camphor, a dram of the spirit. Aulde applies nuclein solution locally. With each of these I have succeeded at times and failed at others. With the following method I have not failed as yet. Calomel is given, a centigram every half hour for six doses, followed by an effective dose of a laxative saline; a centigram of pilocarpine is injected hypodermically; and the patient is given six centigrams of *calx sulphurata* (U. S. P.) every hour until his perspiration exhales the odor of the drug. Chlorine water or some other efficient germicide is applied to the affected pharyngeal surface every hour. Ice or ice cream is given at the patient's will, and cold or ice compresses applied to the neck. Fever is quelled by the combination of aconitine and veratrine a half milligram each, and digitalin a milligram; given every half hour till effect, and then often enough to keep the pulse tension near normal. The inhalation of formalin stops any extension to the nasal region.

Every physician has his own treatment of tonsillitis, which he firmly believes to be the best. It succeeds in all but exceptional cases, and these are they in which the treatment is begun too late. I would suggest that those who are not fully satisfied with their present method, those who may admit the possibility of a better, give a trial to the method here recommended.

Meanwhile, let me reiterate my urgent advice, that the laity be taught to pay more attention to the throat, and to look on every affection there, however trivial apparently, as a thing fraught with ghastly possibilities of evil, and to be treated promptly and effectively.

TAKA-DIASTASE IN NOCTURNAL ENURESIS.

BY

DR. ARTHUR A. RADCLIFFE
Waukegon, Ill.

The results I have gotten during the past year and a half from the use of Taka-Diastase in diabetes mellitus, led me to investigate nocturnal enuresis in children, thinking that some of these cases might be due to a slight glycosuria.

It is claimed that normal urine may contain .02 per cent. of sugar, but it is usually less.

I made inquiry for cases of enuresis, and on Feb. 22nd, 1911, began on my first case, of which I have the following notes:

E. H , a boy of nearly fourteen years old, four feet eleven inches high, weight 87 pounds. Had always wet his bed. Only once or twice in his life has he gone through a night dry. When younger he frequently wet his clothes during the day, but now is generally able to get to a place to urinate. He gets up twice each night to empty the bladder, but even then he wets his bed before and after midnight. Treatment in the past has not benefitted him in the least.

His urine, a noon specimen, had a specific gravity of 1022; evening 1030 sp. gr.; morning 1026 sp. gr. All specimens were acid, clear, contained no sediment and no albumen. With Haine's sugar test solution the urine gave a deposit about equal to .08 per cent. glucose. By fermentation in an Einhorn saccharometer his urine yielded three cubic mm. of gas.

The patient began treatment at noon, by taking six grains of Taka-Diastase three times a day, just before meals. There was no restriction in diet. He drinks two or more glasses of milk at supper and retires an hour later.

The next morning the report was that the boy had wet his bed less than usual, was up twice during the night. The next night he wet hardly enough to be noticeable and was up twice. The third night he passed perfectly dry; was up twice.

He continued for several nights to go through dry, but was up twice each night. He said that he was not passing as much urine during the day, nor as frequently as he had before taking the medicine. The quantity of milk ingested at supper was reduced to one cupful, but he was allowed his usual quantity of milk during the day. He lives on a farm, has a milk route, and drinks considerable of that liquid. The first night after the reduction of milk at supper the boy was up only once; the next night he slept without getting up and has since continued doing so, not wetting his bed. On May 15th, 1911, he told me he had not taken the Taka-Diastase for nearly five weeks, that he had not wet his bed since the first night he stopped and did not get up nights. On April 30th he weighed 92 pounds.

On April 27th, after supper, he drank a full quart of milk. That night he got up at 2:00 A. M. and passed a large quantity of urine, and was up again in half an hour, but did not wet his bed.

At the request of an acquaintance I sent, on April 10th, medicine for two boys who were regularly bed-wetters. A week or so later received this reply: "The boy R., six years old, is getting along fine, no trouble of bed-wetting since taking the medicine. The boy H., four years old, has yet no benefit; he wets days and nights." But a letter dated May 15th, says, "The medicine has stopped altogether both boys from bed-wetting, but the younger boy will sometimes, while at play, wet his clothes."

From the quantity of medicine I sent, 120 capsules, they must have given only one capsule of two and one-half grains at meals to have it last as long as it did. I directed they take two capsules, which dose might have had a quicker effect upon the youngest boy. In letters from the father and grandmother of these boys they say these boys were "bad bed-wetters.'

A. S., boy, eleven years old, resides at the orphanage. One specimen of his urine, acid, clear, 1024 sp. gr. With Haine's test gave a deposit nearly equal to one-tenth of one per cent. of glucose, and by fermentation four c. mm. of gas.

He was given enough Taka-Diastase for four days treatment. The custom at the orphanage is not to give the children who wet the beds much liquid after four o'clock.

The report from the superintendent was: The boy A. S. has been dry the four nights and that is something that never happened before in the four years he has been here. He would miss a night occasionally, possibly once in two weeks, but not oftener than that. He was then out of medicine for four days and passed these four nights dry. Parke, Davis and Company, sent the orphanage a bottle of Taka-Diastase and the boy was again given the medicine.

E. H., girl, twelve years old, large for her age, resides at orphanage. Urine tested normal. She was given medicine for four days treatment. The report was, "The E. H. girl was all right the first, second and fourth nights, but the third night her bed was wet. She has been missing about every other night for some weeks, but to be dry two nights in succession is unusual." She was again put upon the medicine, but received no marked benefit.

Another boy, eleven years old, residing at orphanage, was given the same medicine and received as quick and lasting benefit as the A. S. boy.

Another girl at the orphanage got no benefit from the medicine.

C. M. E., boy, nearly thirteen years old, large, 180 pounds. He occasionally misses a night wetting his bed, but many nights it is "soaking wet." During two weeks treatment with Taka-Diastase, six grains three times a day, he missed several nights, had one soaking wet night, but parents not certain how many he missed.

From my experiments with Taka-Diastase for nearly two years, I feel that a large dose, 10 or 15 grains, might affect those cases not benefitted by a small dose, but my experiments have cost me so much, I do not feel just now like putting more into it.

A Commendable Innovation.—A striking illustration of the change that modern medical advertising is undergoing at the present time is evidenced by the character of the advertisement of Fellows Syrup of Hypophosphites on the last cover page of the current issue. The Latin "Maxine cum cura commixtus sumperque idem. Compositio prima ante alias ommis," is dignified and marks a departure that is to be commended.

The *Canadian Journal of Medicine and Surgery* for September is a specially illustrated number, containing a large selection of halftone pictures, reproductions of old paintings of interest to the profession, photographs of important Canadian cities and buildings, etc., done in very good style and helping to make an issue of the journal that will likely be kept as a souvenir by many of the recipients.

SOCIETY TRANSACTIONS

The Public Health Exhibit of The Ontario Board of Health at the Annual Exhibition at Toronto.—For the first time in the history of the Canadian National Exhibition held in Toronto, a public health exhibit on a fairly large scale was on view. The very great interest manifested by the thousands who saw this exhibit is not only an evidence of the excellent and practical character of the exhibit itself, but also of the desire of the Canadian people to be in the forefront in matters pertaining to this important branch of education. Sanitary or public health matters have within the past few years made giant strides. People are rapidly becoming concerned about the means of prevention rather than the care of disease and what with the information accumulated in respect to the necessity for pure water, disposal of garbage and sewage, of the danger from flies, from the careless spitting of the consumptive, of the necessity for ventilating houses, churches, places of amusement and business, there seems no better way than by such an exhibit as that given by the Provincial Board of Health of the Province of Ontario.

The Exhibit was a further development of the Traveling Tuberculosis Exhibit instituted by the Board during the past few years. This year it embraces for the first time a large variety of subjects relating to public health and it is the intention of the Board to continue this educational feature upon a larger scale. Although the space allotted to the Exhibit was so limited that a large portion overflowed to a tent annex, and a considerable portion remained unopened for want of space, there was even under such difficulties a remarkable display.

The most prominent and compelling part of the exhibit was that devoted to infants or rather to educative means for the prevention of infantile mortality. It is well known how extremely difficult it is to teach mothers the best methods of rearing healthy children. Breast feeding, even among the working classes has fallen to a great extent into desuetude. Consequently, infants are fed artificially, chiefly, of course, on cow's milk and the difficulty is to instruct mothers to so do this as to supply as much nourishment to infants as possible. That gross ignorance exists with regard to the proper feeding of infants is obvious from the awful rate of mortality, that prevails among city babies. One of the objects at the exhibit in Toronto was to bring home this fact in a striking manner.

The American Association for the Prevention of Infant Mortality showed models illustrative of this state of affairs. The first depicted infant mortality. Three thousand five hundred dolls affixed to the wall represented the babies who had died of preventable diseases in Chicago during the past year. In front of this was a revolving cylinder operated by clockwork with a number of larger dolls the head of every fourth one which appeared to view was chopped off by the Angel of Death who stands scythe in hand above. "One out of every four drops into the grave and 70 per cent. of this mortality might be prevented," was the startling object lesson which daily attracted the attention of thousands. None the less interesting was the model illustrating the evils of bad ventilation and the benefit to health to be derived from good ventilation. Two rooms of equal size were shown in which were dolls in tiny beds. At the ordinary breathing rate by means of an ingenious contrivance smoke was seen to rise from the noses of the dolls. In the room which had its doors and windows open the atmosphere remained clear. In the other without ventilation the air soon became quite thick.

These models which were under the charge of Dr. C. St. Clair Drake, of Chicago, the designer of the same, excited great interest, especially among the women and was sufficient proof that in the endeavor to educate the masses on such matters uncommon measures must be taken. The models from their very strangeness first aroused curiosity, and while people lingered to gaze on them, those in charge explained their meaning or answered questions.

Each day of the two weeks during which the Exhibition at Toronto remained open, in the Demonstration Theatre of the Women's Building one of a series of Health Talks were given by various ladies and gentlemen interested in Preventive Medicine. The lectures were interspersed with moving pictures representing good and bad milk conditions, the danger from flies and from tuberculosis. Among the lecturers were Dr. Chas. Hastings, City Health Officer of Toronto, Dr. Helen MacMurchy, Dr. Connell of Kingston, Dr. C. Gordon Heaith, of Ottowa, Dr. G. D. Porter, Dr. W. H. Doherty, Professor Dean, and Dr. Amgot.

As pointed out above, however, the chief and distinctive feature of the exhibit was that dealing with infant mortality and with educative methods designed to produce more intelligent and healthful care of very young children.

The entire exhibit was gathered together and managed by Dr. J. W. C. McCullough, Chief Health Officer of Ontario and reflected great credit upon his ingenuity and zeal.

Millions Educated by Exhibits.—Exhibitions, showing in graphic forms the prevention of consumption, have been shown in every state in the United States, except Nevada, Arizona, New Mexico and Wyoming, and also in most of the Canadian Provinces, and in Mexico, Porto Rico, and Cuba, according to a bulletin issued by the National Association for the Study and Prevention of Tuberculosis. The bulletin also shows that 25 states and 16 cities have permanent and traveling exhibits besides the two operated by the National Association itself, the total number of such displays being over 200, including about 150 small school exhibits.

The first tuberculosis exhibit in America was shown by the Maryland Tuberculosis Commission in January, 1904. In 1906 there were four such exhibits. Today practically all of the larger cities of the country have such displays, and in 25 states comprehensive campaigns have been carried on with them. These exhibits are visited annually by millions of people.

The American Tuberculosis Exhibition of the National Association is completing six years of continuous service, during which time it has been shown under three flags, in the United States, Mexico and Canada, and has been displayed in 21 states, including every Southern state east of the Mississippi, except West Virginia, Maryland and Delaware. The Western Tuberculosis Exhibit of the National Association just closing its season in Butte, Montana, has been shown in Illinois, Kansas, Nebraska, Missouri, Arkansas, Oklahoma, Colorado, Utah, Idaho and Montana.

As a result of the general educational campaign through the various exhibitions on tuberculosis, millions of pieces of literature have been distributed; millions of people shown how to prevent consumption; and several states and cities have been roused to take legislative action against this disease.

OUR NOVEMBER ISSUE WILL CONTAIN THE FOLLOWING PAPERS

The Child as an Asset to the Nation, by A. M. Paterson, M. D., Professor of Anatomy, Liverpool University, Liverpool, England.

On the Medical Examination of Children Reported as Mentally Defective in the Public Schools, by Isabelle Thompson Smart, M. D., Medical Examiner of Mentally Defective Children to the Department of Education, New York City, and Mary Sutton Macy, M. D., Lecturer on Physiology and Pathology in Education School of Pedagogy, New York University.

Scarcoma in Infancy and Early Childhood, by Q. W. Hunter, Louisville, Ky.

The Management of Infantile Eczema, by A. J. Markley, M. D., Professor of Dermatology, University of Colorado Medical School, Denver, Colorado.

Enteritis in Infants and Its Dietetic Treatment, by H. D. Newkirk, M. D., Minneapolis, Minn.

RETROSPECT OF CURRENT PEDIATRIC LITERATURE.

Infectious Diseases

Under the Charge of

ST. GEO. T. GRINNAN, M. D.

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Importance of Early Recognition of Internal Ear Involvement in Acute Infectious Diseases.—Dr. W. H. Field calls attention to the danger of involvement of the internal ear in infectious diseases, (*The Journal of the Indiana State Medical Association*, July 15, 1911). One of the very important causes of the trouble is the insidious onset of the ear trouble, which being seldom accompanied by pain may easily escape detection, and if untreated is prone to produce partial or complete deafness.

If this ear trouble is cared for early in its incipiency it is often amenable to treatment, which is not the case if pressure or inflammation is prolonged. The deafness may occur not from serious infections, but from cases to which little attention was paid. Parotitis is one of the milder diseases that is most frequently complicated with otitis the infection being invariably located in the labyrinthine structures.

Meningitis when involving the ear attacks the cochlea and semi-circulars primarily. Measles, scarlet fever, diphtheria, influenza when affecting the ear attack the middle ear but rarely extend to the perceiving apparatus.

Such symptoms as vomiting, vertigo, extreme tinnitus and prostration should cause the physician to examine the ear.

Transmission of Infections.—Dr. Allen J. Smith, by invitation, read this paper before the Philadelphia Pediatric Society. After indicating that in any case the transmitting agency of an infection was to be referred to either a vital bearer or to some non-vital substance upon, or in which, the infection might happen to be present, and after stating that in a broad way the infant mainly owed its well-known relative freedom to infection in the first months of life to its isolation, Dr. Smith took up in turn a number of the more striking illustrations of living and non-vital bearers of infection. Of all animal conveyers man was himself the most common transmitter of infections to the infant. Therefore Dr. Smith urged the restriction, as far as possible, of indiscriminate fondling of infants by others than proper caretakers. Animal household pets, particularly cats and dogs, were held responsible not infrequently for the infection of children as well as adults, especially in connection with ringworm and analogous skin infections. Insect transmission of infections occurred in infancy and childhood precisely as in later life, the accounts of Koch, Wellman and others in reference to the prevalence of malaria in early life in Africa and of Guiteras in reference to yellow fever among children being illustrations to the point in case of mosquitoes. Fly-borne ophthalmias, suppurations and diarrheal affections (with reflections on the probability of a higher rate of typhoid fever prevalence in the first few years of life than was generally believed, and the likelihood of its transmission by house-flies) were instanced as examples of conveyance by this class; and the same possibility of other arthropods transmitting disease to infants and children as to adults was insisted upon under appropriate conditions of access. Dr. Smith referred to Patten's work upon bed-bugs as intermediate hosts of Leishman-Donovan bodies and to personal communications from Campbell, of San Antonio, Texas, upon bed-bugs as possible purveyors of smallpox. Leaving, of the inanimate conveyers, the general consideration of milk and other foods for the subsequent speakers of the evening, and indicating the unlimited possibilities of acquirement of various infections from all sorts of objects with which the child was constantly coming in contact, Dr. Smith laid especial emphasis upon the possibility of easy acquirement of infectious organisms and parasites or their ova from floor contact when the infant reached the crawling stage of its life. A striking clinical illustration of contact infection was mentioned in the case of a child about one year of age, observed by Professor M. B. Hartzell in the Dermatological Dispensary of the University Hospital, and by him mentioned to Dr. Smith. The child had well developed lupus lesions on the hypothenar eminence of one hand and on one knee. Suspecting from the situation of the lesions that it had been acquired from tubercle bacilli rubbed into the parts from the floor on which the child crawled, Dr. Hartzell readily elicited the fact that the child usually spent a large part of its waking hours on the floor of the room in which its father was confined to bed with advanced pulmonary tuberculosis, and that the child's mode of crawling was definitely on hands and knees. The adherence of bacteria, encysted protozoa, ova of intestinal parasites, as of *Hymenolepis nana* from mouse-droppings, along with harmless dust particles, to the moist and sometimes sticky hands of the crawling infant from the dirty floor, their ready transmission to the alimentary canal when the hands went to the mouth, the infection of the skin of the face and scalp when the dirt was rubbed into these parts, were referred to; and brief reference to acquirement of disease from the ground outside of the house was made. Soiled and infected clothing, bedding and toys as articles liable to convey disease were considered. In closing, Dr. Smith, while acknowledging the possibility of carrying his arguments to a ridiculous grade of impracticability, insisted that the keynote of avoidance of infectious and parasitic disease rested in the grade of isolation of the infant and the cleanliness maintained in its surroundings.

Epidemic Jaundice.—Dr. Arthur N. Collins reports an epidemic of jaundice in Austin, Minnesota (*The Journal of the Minnesota State Medical Association and The Northwestern Lancet*, July, 1911). It is interesting to note that the cases of jaundice first reported were in children and though adults were affected, the majority of the cases were in children. The jaundice corresponded to what Holt and others describe as gastro-duodenitis.

The only assignable cause of the epidemic was stagnant water that was turned into the city main to help extinguish a fire in the town. It must be noted that two cases appeared before the stagnant water was turned into the city water mains, but for one month before even these cases appeared the water in the millpond opposite the municipal pumping station was lowered until considerable of the river bottom was exposed to view. The etiology of this epidemic was a matter of conjecture, but is supposed to bear on the condition of the water. The cases of jaundice appeared as follows: September 6th, two cases; October, 20 cases; November, 14 cases; December, seven cases; date not given, five cases.

Over two-thirds of the cases were 20 years or younger. The youngest case in the series was ten months old. Holt says that he has seen no case under two years of age.

Nothnagel reports Henning as having collected 86 epidemics in the literature. In three epidemics the patients were chiefly children.

Dixon reports an epidemic in Talledaga, Alabama, of 200 or more cases occurring during the summer and fall of 1907. Peck reports an epidemic in Derbyshire, England, of 69 cases. Leslie reports an epidemic of 50 cases in and about Andover, Maine, in which the whole epidemic was traced to low water.

The etiology of epidemic jaundice is a question of considerable interest and discussions on this subject are not commonly seen in the journals.

The Leucocytes in the Early or Pre-Aglutination Diagnosis of Typhoid and Para-typhoid Fevers.—There is a pressing demand for an early diagnosis in typhoid and para-typhoid fevers. The Widal reaction occurs on an average by the eleventh day. There is great need therefore to differentiate early from pyogenic infections in order to avoid improper therapy.

The work and suggestions of Dr. J. F. Hultgen, (*The American Journal of Medical Sciences*, August, 1911), is of great interest. He points out that the typhoid bacilli are present in the blood of the patient from the beginning of the clinical symptoms. Conradi-Drigalski found them even in the feces several days before the onset of typhoid fever.

In pneumonia we date the onset of the illness from the initial chill; in typhoid fever from the appearance of the fever. The incubation of typhoid is of especial interest and most authors put the incubation period at about 20 days. The early leukopenia is of important diagnostic value.

As pointed out by Dr. Hultgen there is a striking discrepancy between our knowledge of the biological properties of typhoid bacilli and the epidemiology of these infections. It is probable that these germs behave differently in the test tube than in the human body.

The white blood changes may be considered as an anaphylactic phenomenon. The bacillemia, of course, and the roseola are part of the biology of the bacillus producing a given infection.

Dr. Hultgen believes that 25 per cent. of all typhoid diseases both in children and in adults are of the para-typhoid variety. The diagnosis of para-typhoid fever is as a rule not difficult. Given the characteristic symptoms of typhoid fever showing a persistently absent Widal reaction, a prodrome accompanied by the characteristic leucocyte picture one is justified in diagnosing para-typhoid fever.

The leukocytology of typhoid fever and para-typhoid fever are very similar and Dr. Hultgen has enumerated the following points as characteristic of the typhoid and para-typhoid gruop of diseases:

1. A leukopenia from the beginning, deepening gradually up to the fourth, fifth and sixth weeks.
2. Moderate initial polynucleosis, lasting from 24 to 48 hours, in uncomplicated cases; 67 to 78 per cent. of polynuclears being encountered.
3. Very early but not initial mononucleosis, progressive and marked, well into the fifth, sixth and seventh weeks.
4. A well marked, early and persistent increase of the large mononuclears.
5. The eosinophiles are absent early and persistently, until signs of recovery occur. They disappear very suddenly on the onset of the fever, and reappear very slowly. Eosinophiles and bacilemia are evidently incompatible.

The summing up of the very able article by Dr. Hultgen leads us to see that repeated double leucocyte counts afford the earliest reliable means of typhoid fever diagnosis for the general practitioner.

Diphtheria Anti-Toxin; Action and Dosage.—Dr. Eugene Bishop Mumford in an able article in *The Journal of the Indiana State Medical Association*, June 15, 1911, points to the fact that although anti-toxin has been used for sixteen years extensively, there is still some difference of opinion as to the dosage.

We know that the unit of anti-toxin is the amount of anti-toxin which is necessary to protect the life of a guinea pig from 100 fatal doses of toxin similar to that adopted as a standard, namely, one having the characteristics of toxin in culture at the height of its toxicity.

Dr. Mumford points out that five thousand units is the dose used by the majority of physicians in tonsillar and pharyngeal diphtheria. The dose is to be repeated every ten to twelve hours until the throat is free from the membrane. In laryngeal and nasal cases the dose must be doubled.

Parks has two series of cases, one in which he used 10,000 to 20,000 units, and the other in which he used 3,000 to 5,000 units. He was unable to see that the larger doses had any greater effect than the smaller doses.

Welch and Shamberg and other prominent authors think it doubtful if the larger dose is of any benefit over the smaller dose. The one very essential fact to bear in mind is to give the anti-toxin early and make the diagnosis ater if in doubt.

Diseases of the Skin and Uro-Genital System

Under the Charge of

EBERHARD WILLIAM DITTRICH, M. D.

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Vaccine Therapy in Diseases of Children.—A compilation of the views of several well known authors on this interesting subject, by Dr. Dingwall Fordyce, M. D., F. R. C. P., (*Edinburgh Medical Journal*, August, 1911). Bulloch at the Royal Society of Medicine in June, 1910, said: "The attitude of the profession in regard to the value of the vaccine therapy is a peculiar one. If a desperate case gets well on vaccines, it is alleged to be a question of chance; if it does not get well, the case but confirms the unfavorable opinion which the clinician expresses."

He himself ventured the hope that in time vaccine therapy would cease to be the "dernier ressort." And this has come true. Many valuable data have been accumulated, and the practice of this form of treatment is now recognized as an important adjunct of therapeutic medicine.

In gonorrhea opinions as to its efficacy differ:

While Dr. Hamilton claims lasting and curative effects in 76 out of 84 cases, there are others (Alice Hamilton, Cooke, Butler and Long, Churchill and Soper and Howland and Hoobler), that did only observe transitory effects from this mode of treatment in gonorrhea. It did improve the symptoms but rarely effected a permanent cure.

In pneumonia, Howland and Hoobler after trying it on fifty cases are unable to report any apparent beneficial results, nor could they see the unfavorable ones. In these cases autogenous and stock vaccines were used.

In furunculosis, other localized staphylococcus infections and in three cases of staphylococcic septicaemia their experience has been absolutely satisfactory.

Empyema and otitis media yielded less readily.

Only a few results of the treatment of local and general conditions caused by infection with bacillus coli have been reported.

As to tuberculin, Dr. Hamill says: "In summing up, it may be repeated that the results from the vaccine treatment are much more satisfactory in early life than in later life, and localized tuberculous lesions, especially the glandular types of tuberculosis, are much more favorably affected than the pulmonary type, especially those with generalized symptoms."

Yeast for Pruritis Vulvae in Diabetes.—From the *North American Journal of Homoeopathy*, June, 1911. Carnot in the (*Progres Medicale*) tells of the treatment of pruritis vulvae in diabetes based on the fermentation of glucose by yeast.

A lotion is applied to the vulva and a vaginal injection made of fresh brewer's yeast, one tablespoon in a liter of water is given. This not only prevented the irritation of the inflamed parts by the irritating contact of the sugar, but as a result of the fermentation a weak solution of alcohol was formed, which had an anti-pruriginous and tonic action on the tissues. The injections and lotions are to be used twice daily and this is the only treatment. In the case cited, the pruritus ceased on the second day, the inflammation subsided and the ulcers rapidly healed.

Carnot suggested that this simple method should be tried in the various external manifestations of diabetes—certain sores, gangrene and stomatitis—wherever the sugar can be made to disappear by fermentation.

A Case of Scabies Contracted From a Cat.—(*Gazette des hopitaux.*, January 31, 1911). As cases of skin disease contracted from domesticated animals are by no means rare, (I am at present treating a case of ringworm contracted from a stray cat, E. W. D.), it is well to pay attention to those features in which this case of scabies contracted from an animal pet differs from cases of human scabies, which we so frequently have occasion to observe in dispensary as well as in private practice. Thibierge reports eight cases in three families, infected from the same source.

The lesions begin as red raised accuminate papules, which soon present a central miliary vesicle, that breaks on being scratched. The lesion then becomes covered with a dry, brown or black adherent crust, like in prurigo or in pediculosis corporis. After some time owing to the simultaneous presence of different stages of the eruption it assumes a polymorphous appearance. In many cases there is a diffuse redness of the skin and in this area the papules can be seen, while at its periphery they are more numerous, larger and oedematous, somewhat resembling the eruption of urticaria papulosa. The distribution of the eruption differs from that of the human species, in that it is chiefly on the covered parts and on the axillary border, the wrists, hands and feet usually being completely free. The characteristic diagnostic features of cat scabies in men are the intensity of the itching, the uniformity of the lesions and their distribution. Also the absence of burrows on the hands and feet eliminate human scabies.

Skin Antisepsis.—Dr. J. R. Hersey, Wheeling, West Virginia, (*The West Virginia Medical Journal*, August, 1911). In an article read before the Ohio County Medical Society, the author consideres the different means of disinfecting the skin for operation; first that of the hands of the operator, then that of the field of operation.

Walker's rules for disinfecting the operator's hands, he thinks, are ideal and worthy of recapitulation:

1. Wash with soap and running water five minutes.
2. Cleanse subungual spaces with not too sharp orange stick.
3. Wash with soap and sterile brush in running hot water again for five minutes.
4. Dry and rub the hands and arms with a sterile towel.
5. Thoroughly brush the hands with a seventy per cent. solution of alcohol for three minutes.
6. Brush the hands in a 1-2000 bichloride solution two minutes and finally,
7. Pull the operating gloves on out of a 1-2000 bichloride solution and wash off their exterior with sterile water.

As to the field of operation he also believes iodine to be the ideal antiseptic. Its germicidal power has been determined by Dr. Kinnaman under the direction of the late Dr. Senn. The author then refers to the method used by Dr. Grossich of Fiume in a recommending manner.

The patient, if possible, is washed and shaved on the day before the operation and the parts are then covered with a sterile dressing and on the following day (preceding the operation) he applies a 10 to 12 per cent. tincture of iodine as follows:

1. After the patient was on the table the operation field was painted with the tincture of iodine with a sponge held in forceps.
2. Over the whole body of the patient a sheet was laid with the opening coinciding with the place of operation.
3. After the anesthesia was fully accomplished a second painting of the operation field.
4. After completion of the operation the row of sutures was again painted and a sterile dressing applied.

At the end of seven days, the sutures which now appeared dry and stiff, were removed. If for any cause the dressings were removed before the seventh day the row of sutures was again painted.

The author holds, that Grossich's disinfection with tincture of iodine (15 per cent.) is a decided addition to the difficult problem of skin asepsis and wound healing.

Enlarged Prostate Associated With Vesical Tumor. Note of Six Cases.—Dr. David Wallace, C. M. G., F. R. C. S., Surgeon Royal Infirmary Edinburgh, (*Edinburgh Medical Journal*, August, 1911). It is necessary to exert special care in differentiating simple enlargement from malignant disease of the prostate. Within the last two years the author has seen six cases of vesical neoplasm, the symptoms of which were explicable from the enlargement of the prostate without any suggestion of the presence of a concomitant tumor.

By operative experience the author has been forced to the following conclusions:

Haematuria is a symptom of prostatic enlargement and of vesical tumor, and in a man with enlarged prostate it is often not possible to say that it is due to the one rather than to the other. Short of operation there is only one means of diagnosis and that is by cystoscopy.

When we have much bleeding, or when the bleeding comes on without any aggravation of other symptoms in a case of enlarged prostate, no instrumentation having been used, it should be borne in mind, that a neoplasm may be the cause.

In such circumstances it is judicious to make a cystoscopic examination prior to the opening of the bladder. In some cases it may not be possible to pass the cystoscope, and then we must operate, but in such a guarded prognosis should invariably be given.

Diseases of the Alimentary System

Under the Charge of

JAMES WARREN VAN DERSLICE, M. D.

Assistant Professor of Pediatrics, Rush Medical College, Chicago, Ill.

Some Observations on the Treatment of Chronic Constipation.—(*Det. Med. Journ.*, May, 1911). Hirschman says constipation may be defined as the voiding of insufficient amounts of abnormal prolonged retention of fecal material in the intestinal canal. Constipation, in contra-distinction to obstipation, is due to purely functional conditions or diseases of some portion of the intestinal tract. Obstipation, on the other hand, is a condition, in which there is a sufficient quantity of fecal material and a normal functional activity, but in which some deformity, growth, flexion, constricture or foreign body in the intestinal body in the intestinal tract, offers a mechanical obstruction to the passage of the fecal current.

Recent studies of intestinal peristalsis by means of repeated radiographs made of the large and small intestines after the ingestion of a bismuth meal, has given us some new light on the normal movements of the intestines. We now know that it takes the contents of the small bowel four hours to travel from the pylorus to the cecum, the distance traversed being 22 and one-half feet in the average case. From the ileo-cecal valve to the recto-sigmoidal juncture the rate of progress is much slower, the average time being from 14 to 20 hours. It will be noted, therefore, that the waste products of ingested food should normally be expelled approximately 24 hours after the meal, and retention longer than that period would make the individual either a constipated or an obstipated patient, depending on the cause of this retention.

The intestinal contents are fluid until they reach the ileo-cecal valve. In the cecum they become less fluid, and having to travel against the force of gravity their movement in the large bowel is checked. Remaining as they do in this portion of the bowel for fourteen to twenty hours, the fluid constituents are gradually absorbed, and the nearer to the sigmoid the feces, the more solid they become.

When the bowel has become atonic, remedies to restore its tone must be employed. In the treatment of acute constipation, cathartic drugs, suppositories and enemas all have their proper place, but the victim of chronic constipation should no more be a victim of the drug habit than the patient suffering from chronic appendicitis. Instead of causing irritating, irregular, erratic and violent peristaltic movements, at certain times during the day; instead of changing from one cathartic to another and constantly increasing the dose; instead of taking away the natural physiological work of the bowel by flushing with enemas, we should strive to bring that bowel back to its normal tone by imitating nature's methods. The only place for a cathartic in the treatment of chronic constipation is the first dose at the beginning of treatment.

The author has devised and has been using for the past seven years a very simple pneumatic dilator for accomplishing this distension, and has achieved very happy results from its use. The apparatus consists of a specially shaped rubber bag, provided with a stem which is slipped over the distal end of a Wales bougie (No. 3 to 5). The Wales bougie is canaled and contains an air vent in the handle, which is closed by the finger tips when inflating the bag. This apparatus may be used in connection with the compressed air tank, or where compressed air is not available may be inflated by means of an ordinary automizer bulb; or a small bicycle pump can be utilized in an emergency.

The technique of its use is as follows: The patient is placed on an ordinary surgical table or chair in the Sims position. The bag is then twisted around itself on the bougie as an umbrella is rolled on its handle. It is then well lubricated and is passed upward into the rectum, first anteriorly until the anal canal has been passed, then posteriorily following the backward curve of the sarcum, and then into the sigmoid to any desired height. The Wales bougie being firm enough to carry the bag up into the rectum or sigmoid, and at the same time being flexible, does not create any discomfort or do any injury in its introduction and passage. It obviates the use of a proctoscope in its introduction. When the bag is in position, it is slowly inflated until the patient complains of either fullness or a slight crampy pain, or a desire to move the bowel. The air is then allowed to escape by removing the finger tip from the air vent in the handle of the bougie. Then, after an interval of five or ten seconds, it is again inflated to the point of tolerance. This treatment is repeated for about five minutes in the average case, when at the time of the last inflation before removal, the cut-off valve, if the compressed air apparatus is used, is disengaged; and the opening in the handle of the bougie closed with the thumb, and the one at the side with one of the fingers; or when the hand bulb is used the air vent in the handle of the bougie is closed with the finger tip and by a to and fro movement, the apparatus is gently and slowly withdrawn. This method of removing the apparatus is of extreme importance, as it massages the bowel as it is withdrawn, and also gently dilates the sphincter muscles.

This treatment is repeated daily for from five days to a week. Usually after the first or second treatment the patient will have a fair-sized unaided movement. Cathartics and enemas are of course strictly prohibited during the treatment. Each day the patient will report a slightly larger and more satisfactory defacation, and often more than one movement during the 24 hours. The patient is instructed to have a definite, regular time for going to stool each day, and also at any other time during the day when he feels the slightest inclination to move his bowels; to endeavor to have a movement. Regularity is a very important factor in the treatment. When defecation approaches the normal the treatments are given only on alternate days. After three or four treatments the interval is then lengthened to two days, and then to three and to four, when the patient is asked to report in five or six days. If he reports satisfactory evacuations daily he is allowed to go a week, and then if a similar report is made he is discharged as cured. He is asked, however, to return for another treatment on the first day on which he does not have a normal movement. Under no circumstances is the dilator to be given to the patient for self-treatment. It is impossible for a patient to successfully introduce the instrument or produce sufficient dilatation on himself to achieve results, and most of the failures reported to the author have been found due to this fact. The treatment must be given by the physician—never by the patient.

The Treatment of Bacillary Dysentery.—F. S. Meara, New York, (*Interstate Medical Journal*, September), in discussing the treatment of dysentery limits himself to that type produced by the bacillus (or group of bacilli) spoken of as the bacillus dysenteriae. Rest in bed which takes away most of the stimulus to increased peristalsis, is desirable in all cases, though in the milder cases the patient will often not accede to such plan. In the more severe cases, however, this becomes imperative, and special stress is laid by the author upon the selection and arrangement of the sick room and bed. Milk meets the dietary requirements better than any other food. The writer's routine practice has been to put the patient on a milk diet, ordering the milk boiled and given every two hours, the patient to take what he will of eight ounces. When the temperature disappears and the stools have lost their diarrheal character, barley jelly and thoroughly boiled rice, and later toast, then eggs,—and gradually the resumption of normal diet. Water should be given freely and all food must be given warm. A dose of castor oil, from one-half to one ounce is especially recommended at the onset of the trouble. Following this the author has found the following prescription especially gratifying probably due to the ol. ricini:

℞ Tr. opii deodorati	1.
Salol	2.50
Olei ricini	10.

M. et Div in capsule No. XV.

S. One every two hours.

For the colicky pains hot fomentations are often of value. Comfort may also be afforded by warm rectal irrigation at 100 degrees to 105 degrees F. of physiological salt solution. About two quarts may be used at a time, in some cases even more. The irrigation may be followed by an astringent, the best being silver nitrate. It should be used in increasing strengths, 1 to 2,000 at first and increasing up to 1 to 500. If the solution of silver gives great pain it is too strong and may be neutralized by salt solution. The treatment must be intermitted occasionally to let the mucosa recover from any possible irritation by the silver. At times the chronicity of the disease may be due to the irritation these very measures keep up and a cessation of local measures is followed by rapid recovery. If the tenesmus is very severe the following suppository is recommended.

℞ Opii pulveris	gr. 1
Extr. belladonna fol.	gr. ¼
Olei theobromatis	q. s.

When the pain is too great to be relieved by these, morphine hypodermically has to be used. For the diarrhea the author relies upon opium rather than bismuth, for which he has slight regard. The opium need rarely be used in greater dosage than one drop of the tincture every two hours. In convalescence from severe cases much too little use is made of carbohydrates in the dietary. Barley, rice, farina, bread and butter, and cereal soups should all be used. Beef, mutton and chicken and the purees of the vegetables may also be allowed. Under-nutrition is to be carefully avoided.

Edema Occurring in the Course of Disease of the Gastro-Intestinal Tract in Infants.—By Hugh T. Ashby, B. A., M. B., M. R. C. P., Medical Officer to Out-patients, Manchester Children's Hospital. During the autumn it is fairly common to find in a large out-patient department of a children's hospital infants who have edema of the feet and hands. These infants have, during the summer, suffered from a chronic gastro-intestinal catarrh, which has in most cases persisted for some weeks, and it is during the autumn, when the vomiting and diarrhea are getting better, that the edema appears in the children that have suffered most. The edema is bilateral and appears first on the dorsum of the feet, then on the back of the hands, and in severe cases the face becomes puffy and swollen, so that the condition closely resembles a case of renal disease. There is usually no cough, both the heart and lungs are healthy, and the bowels act regularly. If an acute chart of the infant's weight is kept in one of these cases in which there has been chronic gastro-intestinal catarrh for some time, the infant remains at the same weight for about two weeks after the cessation of the diarrhea, when it is found that the baby has suddenly begun to gain weight rather rapidly, which is accounted for by the appearance of the edema. If the infant gets over the illness, the weight will decrease as the edema disappears. There is no vomiting and no rise of temperature and the edema comes on slowly without apparently any cause. Albuminuria is found frequently in infants suffering from gastro-intestinal disturbances, and the occurrence of the edema does not make the presence of albumen in the urine any more common. Microscopically, the urine often contains a few leucocytes, but never any blood or casts, and I have never been able to demonstrate that the urine contained an excessive number of bacteria.

The edema occurring in the course of chronic gastro-intestinal catarrh in infants is not connected with the condition of the kidney, and post mortem no changes are found in the kidneys beyond, in some cases, a cloudy swelling of the tubules, and, anyhow, not enough change in the kidneys to account for the amount and length of duration of the edema.

On examining the blood of these cases, and taking care to obtain it from a non-edematous part, it is found that there is a high proportion of hemoglobin and a large number of red blood cells per cubic mm., thus in a typical case there were 80 per cent. of hemoglobin and 5,500,000 red blood cells per cubic mm., both being above the normal for an infant at the age of one year.

Treatment.—Treatment consists in trying to raise the general condition of the infant by suitable feeding, and these infants appear to do best on a food containing a high percentage of proteids with a low percentage of carbohydrates and fat, as recommended by Holt.

To increase the amount of urine potassium citrate seems to act better than other diuretics, and under its influence the edema often quickly disappears. Digitalis, *m* 1-10 every two hours for a short time is also beneficial.

Infantile Pyloric Stenosis and Infantile Spasmodic Plyoric Stenosis With Report of Three Cases.—(*Ther. Gaz.*, May 15., 1911). A. L. Hertel, states, I use the term infantile in preference to congenital, for it is my belief that these conditions are not congenital but have developed since the child has commenced to take nourishment.

The exact cause is not known; but as we rarely see the condition before two weeks, we must attribute it to some irregularity in feeding. Were it congenital, the trouble would present itself immediately, but as it rarely occurs before two weeks can we not say that it is infantile, and give for its causes improper food, irregular feeding and overfeeding?

The diagnosis is not an easy one, and however suggestive the symptoms may be, it is only by exclusion of other infantile troubles that we arrive at a correct diagnosis.

Sex seems to play a part, as more boys are affected than girls.

The age of the child is a noteworthy factor, as the condition is rarely to be seen before two weeks in either spasmodic or true steonis, and if it is found in children over four months we can at once exclude true stenosis and direct our attention to the spasmodic form.

Constipation in true stenosis and alternating constipation and diarrhea in spasmodic stenosis seem to be the first symptoms that attract the attention of the mother. She tells you that the child has had no stool for a few days, and that all the medicine she has given has done it no good. Also, that she has given an enema and still found no result.

The treatment divides itself into four heads: Dietetic, physical, medicinal and surgical.

The mother's milk should always have preference, and even though the child cannot retain the food, the secretion should be kept active. Should the child absolutely refuse the breast, milk in minute quantities cooled with ice and given after vomiting spells yields very good results.

Whey, buttermilk, pre-digested food and beef broth make suitable foods.

Hot applications over the stomach during feeding have a marked result. I would state that even in suspected cases the hot applications improve any abnormal condition of the stomach.

Rectal feeding of broths and normal saline solution should be commenced immediately, thereby giving the stomach resting periods of a day or more.

During the progress of the case the child should be weighed, and even the fraction of an ounce should be noted.

Under physical therapeutics stomach lavage should be systematically done. The temperature of the water should be between 80 and 85 degrees F.

After the stomach has been thoroughly washed the feeding should be commenced in minute quantities and be every two hours. This method works admirably in spasmodic stenosis, but the results in true stenosis are not so satisfactory.

Surgical interference is the only cure for true pyloric stenosis. There are many cases of supposed true stenosis that have recovered, but I venture to say that an accurate diagnosis would have revealed a spasmodic stenosis.

The different methods used in surgical interference are Loreta's divulsion, pyloro-plasty and gastro-enterostomy.

Owing to the low mortality of Loreta's operation it seems to have the preference over the others. It consists in entering the stomach through the anterior surface, and with the aid of a dilator stretching the pylorus. The stomach is then closed and nature is left to finish the task.

OUR DECEMBER ISSUE WILL CONTAIN THE FOLLOWING PAPERS.

Joint Tuberculosis, by Leonard W. Ely, M. D., Consulting Orthopedist to the County Hospital, Attending Orthopedist to the Children's Hospital, Denver, Colo., member of the American Orthopedic Association, and the American Medical Association; Associate Fellow of the New York Academy of Medicine; formerly Surgeon to the Sea Breeze Hospital, Consulting Orthopedist to the Roosevelt Hospital; Orthopedic Surgeon to the Metropolitan Hospital, New York.

Condensed Milk as a Food for Infants, by L. Emmett Holt, M. D.

Common Ailments in Infancy and Their Treatment, by Eric Pritchard, M. A., M. D., Oxon., M. R. C. P., London.

Prophylaxis and Treatment of Infantile Paralysis, by J. W. Amesse, M. D., Past Assistant Surgeon, U. S. Public Health and Marine Hospital Service, Denver, Colorado.

The Sanitary Control of New York's Milk Supply, by Ernest J. Lederle, Commissioner of Health, N. Y. City.

The Surgical Treatment of Poliomyelitis, by Gwilym G. Davis, Professor of Orthopedic Surgery, University of Pennsylvania, Philadelphia, Pa.

The Pathology and Treatment of Whooping-Cough, by Clinton Thorington, M. D., Montgomery, Alabama.

Acute Nephritis in Children, by H. M. McClanahan, A. M., M. D., Omaha, Nebraska.

OCTOBER

"The naked hills lie wanton to the breeze,
The fields are nude, the groves unfrocked,
Bare are the limbs of shameless trees,
What wonder is it that the corn is shocked!"

BOOK REVIEW

Cholera and Its Treatment, by Leonard Rogers, M. D., F. R. C. P., F. R. C. S., B. S., I. M. S. Physician, Cholera Wards, Medical College Hospital, Calcutta, Professor of Pathology, Medical College, Calcutta; Fellow of the Calcutta University; Fellow of the Asiatic Society of Bengal; Corresponding member of the Philippines Medical Society, the American Society of Tropical Medicine, The American Climatological Association and the Societe De. Pathologie Exotique; Mary Kingsley Medallist for Research in Tropical Medicine. London, Henry Frowde, Hodder & Stoughton, Oxford University Press, Warwick Square, London and New York.

Just now the subject of a cholera epidemic at the Port of New York is agitating the minds of the State and National Health Authorities, therefore, a review of a work on cholera should be of interest to the profession at large. The work before us is divided into six chapters, viz: The first giving a history of cholera epidemics from the beginning of the 18th century to the present time. The second chapter is devoted to epidemiology. The third to etiology and prophylaxis. In chapter No. four is found a complete clinical discussion of the disease in all of its stages. Chapter five contains a discussion of the morbid anatomy and pathology of cholera. Chapter six is devoted to treatment.

The present work was planned and commenced three years ago with a view of combining the accumulated knowledge of the last century. With the system of treatment based upon the author's researches on the blood and circulatory changes in cholera, which have recently occurred in the author's observations and been the means of reducing the mortality among cases treated in Calcutta and elsewhere in India. The author has made an exhaustive study of all the literature on the subject of cholera that has been produced and from his own experience and the researches made by other men, he has produced a work that is up to the minute on the subject of cholera. One thing to be commended in this work is the complete discussion of the practical details in the treatment of this disease. The author avers that there is no important specific disease in which a larger proportion of lives can be saved by simple measures, carried out at the right time than in cholera.

A tremendous drain of the fluid contents of the blood is a marked characteristic of cholera. By means of the hematocrite the author fixes this loss at from about 36 per cent. in mild cases, to 64 per cent. in the most severe. About 54 per cent. represents a case of moderate severity. A pathological laboratory is not always available, and it is well to know of simpler and speedier methods. A sufficiently accurate estimate of the hemic condition may, for clinical purposes, be made at the bedside in a couple of minutes, by determining the concentration of the blood by taking its specific gravity. For this purpose Rodgers uses a series of aqueous solutions of glycerine ranging in specific gravity from 1040 to 1076.

The loss of salts is no less important than that of the serum. In this connection where about two-thirds of the plasma had been lost Rodgers notes, "The chlorides in the serum were slightly lower than normal, instead of being three times as great as would have been the case if no salts had disappeared from the circulation."

It is equally important to note the condition of the blood pressure. Rodgers's observations were made mainly in native patients in Calcutta by means of a mercurial sphygmometer. The normal pressure ranged from 100 to 120 mm. In the majority of cholera cases it was found at the most to have fallen below 70 mm., and was frequently as low as 50 or 60 mm.

Rodgers bases his treatment on the circulatory and blood conditions above noted. The main feature is, that in a case of cholera when collapse occurs and the blood pressure has fallen below 70 mm. he endeavors to raise the pressure again to the normal and to replace the salts and serum that have been lost. "By the use of hypertonic solutions," he says, "the saline content of the blood is immediately raised very considerably, with the result that the osmotic currents will tend to carry more fluid into the blood rather than to allow it to escape from it, and thus the diarrhea is checked instead of encouraged, as by normal salt solutions."

The solution used by the author contains four grs. of calcium chloride, six grs. potassium chloride, and two drs. of chloride of sodium to the pint of water. Four pints may always be injected into an adult where the specific gravity of the blood is over 1063, and another pint may be administered should the blood still require dilution to the normal point. The author has given full details and the method of injection is clearly set forth.

The paper and type are good. There is a capital index. The maps will gain much in utility if in future editions colored lines and a bolder type are used.

Handbook of Suggestive Therapeutics Applied Hypnotism Psychic Science. A Manual of Practical Psychotherapy, designed especially for the general practitioner of medicine and surgery, by Henry S. Munro, M. D., Omaha, Neb. Third Edition, revised and enlarged, price $4.00. St Louis, C. V. Mosby Company, 1911.

The exhaustion of two large editions of this work within less than two years after its first appearance speaks well for its reception at the hands of the profession. Psychotherapy undoubtedly deserves recognition as a therapeutic agent and Dr. Munro, in this work clearly puts before the profession in this most readable volume the science of psychotherapy and the use of hypnotism as a therapeutic procedure.

This last revision contains eight new chapters, which together with the enlarged and rewritten chapters of the preceeding edition constitute an embodiment of the recent advances in psychotherapy, while the practical technic of the second edition is made plainer, if possible, in this revision. The author has incorporated the newer methods of employing psychotherapeutic procedures, such as are practiced by Freud, Breuer and Jung, and he succinctly describes the application of this method to meet the requirements of the general practitioner, in so far as he conceives them to be of practical value in the work of the physician.

There can be no doubt but that hypnotism is of value in the treatment of a certain class of nervous diseases designated as the psychoneuroses and the author of this volume offers, "as proof beyond contradiction" the great value of hypnotism as a therapeutic principle in the treatment of disease.

Hughes' Practice of Medicine, including a section on Mental Diseases and one on Diseases of the Skin, tenth edition, revised and enlarged, by R. J. E. Scott, M. A., B. C. L., M. D. Attending Physician to the Demilt Dispensary; Formerly Attending Physician to the Bellevue Dispensary, New York, author of "The State Board Examination Series," etc., etc. With 63 illustrations, price $2.50 net. Philadelphia, P. Blakiston's Son & Co., 1012 Walnut St., 1911.

When a book has successfully passed through its 10th edition, it is sufficient acknowledgement on the part of the profession that the work is appreciated. Hughes' handy, little, elegant leather bound Practice of Medicine is out for the tenth time and this revision has been made with pains-taking care, necessitated by the many changes and advances in treatment during the past few months.

This new edition contains 100 pages of reading matter more than the previous one, besides it has a much fuller index. Sections on treatment are much more complete and the prescriptions more numerous than in any other similar work. The table of contents will show that the general arrangement has been considerably modified. For example, pneumonia and tuberculosis no longer appear as diseases of the lungs, but take their rightful place among the infectious diseases; and Herpes Zoster will be found among the diseases of the nerves, rather than among the skin lesions. Several new sections have been added, such as pellagra, glandular fever, foul breath, Cammidge's reaction, paralysis of the laryngeal muscles. The book as a whole has been thoroughly revised, much of it has been rewritten, sections that were obsolete or unnecessary have been omitted, and almost every page shows changes.

Diagnosis and Treatment are the foremost elements in the successful treatment of diseases and the numerous tables of differential diagnosis incorporated in the text add very much to the usefulness of the book. The revisor has added a great many illustrations and charts to this edition, in the hope of rendering the volume more useful to students and practitioners.

Altogether this is quite a handy little text-book on the Practice of Medicine and we believe will continue to be appreciated by the profession.

PEDIATRICS

Vol. XXIII NOVEMBER, 1911 No. 11

EDITORIAL

APPETITES THE RESULT OF IMITATION.

The child is born with an imitative factor and as he grows in age this faculty for imitation increases and unfortunately he is just as liable to imitate or copy that which is harmful just as readily as that which is good. Likewise man is often impressed with the pre-eminence of his teachers or superiors and carries out this imitation even when he is aware of the evil that results to himself. The faculty of imitation is a factor in the growth and development of all races of people, it especially applies to the more primitive appetites of eating and drinking. The use of tobacco by the English was from imitating the Indian, and the drink habit likewise began in a period almost as remote as the Garden of Eden, while personal experience from both evils, in the beginning are unpleasant and more or less harmful; still the novice, with a pertinacity worthy of a better cause, continues, and soon overcomes the "dread." Eating to a large extent, is the result of imitation with both man and animals. The animal as soon as born sees its kind feeding and copies the actions of others around, likewise the human cub must have the things he sees his elders eating.

Not only children imitate in such things, but adults copy adults; they often eat because they see others eat and are led into excess from the instinct for imitation and emulation rather than the instinct for sufficient food. On this account, in some hospitals it has been deemed advisable to screen certain ward patients from each other during meals, in order that they may not be influenced in their appetites by the sight of others who can enjoy a more liberal and varied diet.

A writer in the Diatetic and Hygienic Gazette relates a case which illustrates how far this imitative trait may be accountable for grave results. "His patient, a boy of twelve, gradually began to fail in health. The parents were strong, robust farmer people, and the environment of the child seemed wholly conducive to health. The boy steadily declined, although it was noted that his appetite was excellent. The services of the local physician being of no avail, he was taken to one of the most eminent clinicians in the country. He was kept under observation for some days, but aside from a polyuria nothing was detected, and the child was sent home with the prognosis that he would improve in the course of time without treatment.

"The boy did not improve, and the parents bethought them to a friend of the family, a physician in an adjoining state. The latter took him into his home and was at once struck with the boy's large appetite and the inordinate amount of water which he drank, both out of all proportion to the needs of a body at his age. He further noted that the father was a very hearty eater and that he drank an unusual quantity of water. The boy admired this parent very greatly, and after a careful study of the problem this physician came to the conclusion that the boy had got into the habit of imitating his father in his methods of eating and drinking. He put him in a private hospital with food and water suitable in quantity for a child of his age, and he began to improve at once and within two weeks the change was noticeable. The child's tonsils were somewhat over size and there were some small adenoid growths which it was thought well to remove, but the physician does not consider that these had more than a slight influence on the child's health and attributes the whole improvement to an escape from an imitative habit. On returning home the restricted diet was enforced and the child is in good health."

Such extreme cases are rare, but doubtless very many children would be far better off if they were excluded from sight and sound of their elders when they are satisfying their appetites, and a great many adults would be very much better off if they could be more independent in their habits of eating and drinking—if they would be guided by their innate instinct for food and drink rather than by an imitative process in supplying their body needs.

WHAT SHALL BE DONE WITH THE FEEBLE-MINDED CHILD ?—A MENACE TO THE STATE AND SOCIETY.

Three hundred thousand feeble-minded persons are running at large in the United States. "Eighty per cent. of the feeble-minded children come from 19 per cent. of the community." "Idiocy-feeble-mindedness is simply another word for it—is a matter of heredity." "There has been a terrible increase in the number of feeble-minded children in the past few years." "Feeble-minded mothers are twice as prolific as normal women." "The country cannot build institutions rapidly enough to house and take care of the feeble-minded." So says Professor Henry H. Goddard of the Vineland Training School for feeble-minded children.

The question arises. What shall be done with feeble-minded children? We are not ready to adopt the old Spartan custom of putting to death the feeble-minded and the physically unfit, although there are some persons who believe this should be done. We cannot continue to house them. The expense is already greater than the State can bear. We must put an end to breeding feeble minded children as far as possible and train those we have and those that are bound to come to be self-supporting. If we would cope successfully with this menace of feeble-mindedness, we must put aside sentiment and deal with the problem in a practical scientific manner. We can, if we will, prevent the birth of feeble-minded children, by, *first* preventing the marriage of feeble-minded people, *second* by putting in institutions where they may be kept for life, all persons who are capable of begetting or bearing children and who would be likely to give birth to feeble-minded children, *thirdly* we can sterilize these persons who would become the parents of feeble-minded children. Of these three methods the ideal one would be to place them all in colonies where they would be kept as long as they live. One generation of work would destroy the whole inheritance line. But inasmuch as this cannot be done entirely and is too slow, we must, resort to some form of either castration or vasectomy and it must be practiced on the female as well as on the male. It must be carefully safeguarded to prevent malpractice but that can easily be done.

The only solution of this vexed problem is he unsexing of all feeble-minded persons to prevent their pro-creating more feeble-minded children. The State of New Jersey has already enacted a law which provides for the unsexing of all inmates of institutions for the feeble-minded. This is a step in the right direction and the other States would do well to fall in line.

CARDIAC DISEASES IN INFANCY AND CHILDHOOD.

Heart disease as it appears in children presents many peculiarities which may readily mislead those who have seen it only in the adult. Like chorea and rheumatism it is far more common in girls than in boys. It develops between the fifth and fifteenth year with greater frequency than at any other period of life. That a cardiac lesion may follow an attack of measles, diphtheria, or scarlatina, especially if renal symptoms are present cannot be doubted. The most recent investigations, however, furnish additional proof that in the vast majority of cases the exciting cause is rheumatism. The symptoms of rheumatism are often very obscure, consisting perhaps, of slight swelling of a joint with stiffness and pain or simply of the so-called growing pains. We have seen a permanent mitral murmur develop during an attack of torticollis in a previously healthy child of rheumatic parentage. A cardiac murmur frequently appears during the course of chorea. As it sometimes disappears as the choreic symptoms subside it was formerly believed that such a murmur might be functional in character. More extended investigations shows that this is very rarely the case. It is, as a rule, perhaps, always organic. It is true that the murmur accompanying chorea sometimes disappears, but if such cases are kept under observation it will be found that in a considerable number the abnormal sounds reappear after the lapse of a few weeks or months. There is strong ground for the belief that chorea complicated by endocarditis is always rheumatic chorea, and that the endocarditis is in fact an expression of rheumatism rather than of chorea.

The symptoms of heart disease in children are often obscure and in many cases are for long periods entirely wanting. Dyspnoea and palpitation are the most common. Actual pain is rare, but slight palpitation or tumultous action with praecordial distress is frequently seen. Pain is more commonly associated with mitral stenosis than with any other form of chronic cardiac disease. Odema and cyanosis are extremely rare.

Dropsy, cyanosis, tumultuous palpitation, praecordial pain and extreme dyspnoea, a combination of symptoms so often seen in the adult, is a rare sight in a child under twelve years. The clinical history of heart disease is divided into three distinct periods,—acute inflammation, or endocarditis; compensation or hypertrophy; heart failure or dilatation. These periods are not always clearly defined nor do they always follow in the same order. Complete compensation frequently follows a period of failure of heart power. It is absolutely necessary, however, for the successful management of such cases that these distinctions be constantly born in mind. All that treatment can accomplish is to establish and maintain compensation. If compensation be perfect already, as it so often is in children, there will be no symptoms whatever of heart disease and nothing to treat. It is highly improper to treat a child for heart disease, simply because a murmur has been heard in an examination of the chest. But this does not mean that the physician has no duty towards such a case. The parents should be informed of the condition present and the physician's advice should be sought at the first appearance of anaemia or impaired nutrition. Heart failure may take the place of compensation with surprising rapidity and should be checked at its first appearance. Nutrition should be maintained at the highest possible point; exercise and games should be regulated and intercurrent attacks of illness should receive special attention. The child should be scrupulously guarded against every condition that may tend to precipitate an attack of rheumatism. Upon this point, above all others, the parents should be especially warned, and the mildest attack should receive immediate attention.

THE PERIOD OF GREATEST DANGER OF CARDIAC DISEASES IN CHILDREN.

A period of especial danger in the life of a child suffering from heart disease is the interval from the thirteenth to the fifteenth year. From the seventh to the fourteenth year the actual volume of the heart increases but little. There is then a period of sudden heart growth when the volume increases from eighty to one hundred per cent. within the short space sometimes a year or two. This is, therefore, a most critical period. A patient that has been doing well for several years may develop serious symptoms and quickly succumb. In others, growth and development are retarded, without the immediate development of serious symptoms. By far the greater number, happily, pass this period without serious inconvenience, outgrowing, so to speak, the valvular lesions. In general terms it may be said that the prognosis of cardiac disease in the child is better than in the adult, but this is modified to a large degree by the surroundings and social condition of the patient. If he is ungoverned and unrestrained, permitted to indulge in violent games and exercise, is surrounded by unhygienic conditions, and subjected to exposure the prognosis is very bad. While the favorable prognosis may be freely given a positive statement should never be made, for no skill can forsee the numerous conditions that may at any time arise to destroy the compensation.

The murmur of greatest frequency in children is the mitral regurgitant, being present according to some observers in at least 90 per cent. Mitral stenosis occurs with comparative frequency and is of great interest both because of the peculiarities of its signs and symptoms and because of its serious nature. Pain is more common with this than with any other murmur, while bronchitis and coughs are constant and are very rebelious to treatment. The murmur is very slow in its development and does not occur under the age of five years. Its diagnosis is important through its bearing upon prognosis, yet it is more commonly overlooked than any other murmur. It is usually harsh, rattling or blubbering in character. In one important particular it differs from all other murmurs. The sound instead of rising to a maximum and then gradually shading off into silence, rises rapidly to the maximum and suddenly ceases as the apex strikes the chest wall When the regurgitant murmur is present, as is usually the case, the two sounds run so closely together as to be distinguished with great difficulty at the apex. The regurgitant murmur is transmitted to the left, while the area of transmission of the obstructive murmur is circumscribed. Hence if the stethoscope be carried from the apex toward the left the first portion or obstructive murmur suddenly ceases at a definite point while the second or regurgitant portion continues unchanged. A thrill is not as common as in the adult and may be absent in well marked cases.

HARVARD'S YOUNGEST STUDENT.

William Sidis, The Youngest Harvard Student.—Dr. Boris Sidis' son William Sidis, has attracted considerable attention owing to the early age—11 years—at which he entered Harvard. The success soon attained in higher studies by this youthful savant, owing to the carefully planned and intelligent training given him in his earlier years by his father, made it seem probable that his brain might soon give way under the stress of excessive mental labor. Indeed, it was reported that the boy has broken down from overstudy. The following letter, received from his father, shows that this is by no means the case, while substantiating the opinion of Dr. Sidis that present methods of primary education fail utterly, in our country, to utilize to the best advantage the mental capabilities even to the average child.

"My son was 13 years old on the first of April. He is tall, five feet, four inches, and weighs 112 pounds. Since last year he gained nearly 20 pounds in weight. He looks like a boy of 16. At present he is at Harvard taking advanced courses in the higher branches of mathamatics and astronomy, also in the highest branches of modern critical analysis of Greek literature. He knows Homer by heart and reads the works of Aeschylus, Sophocles, Euripides, Herodotus, Lucian with the same ease with which a high school boy reads Dickens and Walter Scott. He also has a fair understanding of our politics and the groundwork of our Constitution. I may say that he works no more than five or six hours a day."

Much ado is made about the lack of preliminary education shown by the average medical student (in keeping with all other American students), and it is believed that the addition of two years' college work to his present equipment will improve the situation. But it will not The fault does not lie with the student, but with the American system of education which endows a boy of 18 with knowledge that a boy of 14 in Europe would be ashamed of. If Dr. Sidis's address in our December issue is read with care, the reason for this unfortunate state of affairs will become apparent.—*Editorial, Month. Cyclop. and Med. Bull.*

PEDIATRICS

ORIGINAL ARTICLES

THE CHILD AS AN ASSET TO THE NATION.*

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In any discussion on a subject dealing with the matter of population one cannot avoid using plain terms if one is to be clear in thought and expression. The problems involved require plain speaking, whatever side is taken in the argument. The interest taken nowadays in social questions, the care of the poor, the unemployed and the unfit, and in the subjects which like heredity, are grouped together under the term, "Eugenics," the public mind is conscious and awake in regard to a matter which for over half a century has been of world-wide concern, though only mentioned in camera in domestic and medical circles.

Monogamous Marriage.—I take it for granted that marriage as an institution needs no defense, although at the present time, with the wild ideas expressed by women, and the slackening of religious force and the weakening of religious authority, marriage is no longer regarded as an ideal institution. Within recent years the sex-novel, usually written by a woman, has obtruded its loathsome features An immense amount of literature of all sorts dealing with love and associated subjects has sprung up, and in all this literature a strong feature is the apparent revolt by woman against marriage—a revolt which in some cases indicates a disregard of chastity and a contempt for virginity. We cannot avoid the conclusion that such books reflect one aspect of public thought. Women are dissatisfied with the institution of marriage as it exists—under modern conditions. For example, a recent author goes so far as to assert

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*Read before the Liverpool Medical Institute, *Liverpool Medical Chirugical Journal* No. 60, July, 1911.

that without wages it is unfair that a woman should sacrifice her life, bear children, manage a house, cook, darn, etc. "Candida" reflects to a certain extent the same sentiment. The reasons for marriage given in the *Marriage Service* do not satisfy the modern woman.

The individualisation and personality of love have become more consciously recognized. The possession of a family is not regarded as the be-all and end-all of marriage. The mutual possession of one another is the modern reward of love—it may be in the most platonic fashion, it may be by sexual gratification. But it is essentially personal and individual. And women, the more independent they become, the more they become workers, earning their own livelihood, are coming to realize their power, and are seeking gratification selfishly, and with a stern determination to avoid the consequences—the disasters—that so often attend upon marriage.

In spite, however, of these modern tendencies, marriage is the one social institution that can be depended upon to bind society together; no other social institution that could be proposed can take its place for the special purposes which it subserves.

Nor need we discuss the thesis that the human species, like the blackbird, is monogamous by instinct. Monongamous marriage must be looked upon as the central essential feature of modern civilized society, and its avowed and looked-for consequence is the propagation of the species.

For any other purpose—sympathy, friendship, protection—the institution of matrimony and its attendant laws would be unnecessary. But these legal enactments are to bind together the family; for the care of the progeny, and their upbringing, and for the protection of property and particularly of the women. Laws are made to prevent evil, and to punish the transgressor; and woman as the weaker, requires protection most.

We may start, however; with the assumption that the family is the social unit. The individual man or woman, and his or her powers in the world for good or evil, depend upon the existence and maintenance of family life. The whole community is a congeries of families linked together by diverse social strands.

Now, there is a marked contrast in the numbers of the family of today and that of, say, 30 years ago. The typical "mid-Victorian" mother had at least seven children. Queen Victoria had nine children (four sons and five daughters), like everybody else in those days.

The Freedom of the Modern Woman.—One of the obvious features of the age we live in, which, again has an important bearing on our subject, is the increased freedom of the modern unmarried woman. Thirty years ago the latch key question for boys was debated in domestic circles; now the girls have them, and come in and out, unquestioned and trusted.

What do we find today? The modern maiden at the age of 21 is preparing to have a good time; she is spreading the wings of freedom, and the maternal instinct is hard to find.

It would be interesting to know what truth—if any—lies in the assertion of G. B. Shaw, that the maternal instinct is the "life-force" which compels women to marry. There is no doubt that one of the essential differences between the sexes lies in this direction. Every good woman possesses a mothering instinct; and one of the most astounding revelations to a man is the contented placid mental condition of the pregnant mother. To what extent this instinct, this craving for a child of her own, drives woman into matrimony, a mere man cannot know. But he realizes in it a faculty which he does not posses, and which, I think, has a real significance in relation to the problem under discussion. My main point is that the modern woman is losing this "life-force," and is declining with her eyes open to the responsibilities of motherhood. She realizes that freedom is sweet; and that the joy of life can be had as readily without marriage as with it; indeed, in many cases she is more independent single than if she were married.

This desire for freedom, and the enjoyment of it, lessens her desire for marriage—she does not want to spend her days in "suckling babes and chronicling small-beer," she is taking up intellectual occupations, and finding a market for her brains, whereas, hitherto her only marketable value seemed to be her body. So unless a girl is caught up in her early years when her sexual instincts are ripening, and her self-control or her self-interest is less active, she is more averse to marriage and the servitude it occasions.

After the period of youth is over, and a girl has enjoyed the fruits of freedom, she may be ready to "settle down." But she does it with her eyes open. She knows the weaknesses and foibles of men. She will no doubt make a better wife and companion than an ingenue and she will do her "duty" to posterity—in moderation. But she will in everything be more calculating and circumspect than any man. For every good reason that can appeal to her mind the population must be limited.

Physically fit and intellectually keen, the modern girl is in no hurry for matrimony; and when the time comes, when the maternal instinct asserts itself, or the right man comes along, or she decides it is time to range herself, the twentieth century maid is no "extravagant fool" like her mother or grandmother. The man to whom she engages herself may or may not be able to give her luxury or independence. That is not her first point. She is courageous, and can face poverty and privations; but her mate must be her equal in freedom of thought and sympathy in the mode of life to be adopted after marriage. Before the wedding day she makes her bargain:—

"I give you my body, my independence, my sympathy, my faithful service; for better, for worse, till death us do part. I agree to restrict my life to domestic uses, and to rule your household for your ease and comfort. I am ready to make certain sacrifices in return for your personal devotion, sympathy, name, and protection. But, I require a certain reserve of freedom. I must live my own life. I cannot be wholly absorbed, or become a mere 'household drudge,' or 'drawing-room ornament.' I will not pass the best years of my life in bearing children. So the first question we must settle is the baby question. This must be my marriage settlement. One, two, three; altogether, or one at a time. But we must agree on a top limit, and get the business over"

In the foregoing statement I make no exaggeration. The modern woman feels unjustly treated. She thinks in bearing children she bears an unfair burden. She thinks man has always the best of it, and that women seem made to suffer. He has the pleasure; she has the pains. Why—even though married—should a woman not enjoy the sweetness of life between thirty and fifty, the years which to man are the most vigorous and enjoyable, with an active mind and a healthy body. Why should she be continually the brood mare, until—worn out at fifty—she sinks into a dull old age, crippled perhaps, and diseased or weakened, as a result of her life's work? She says she can do more good, and get more enjoyment and profit out of life, if she exercises moderation in her maternal output. And from the point of view of the individual woman, whose first aim is self-gratification, no one will blame her. She must live her own life. The question we have to consider is whether or not this is not a too narrow and selfish view of the situation.

Limitation of Families.—The institution of marriage is responsible not only for great benefits to mankind, but it is also responsible for some frightful evils and anomalies. It ties up together for life the incompatibles; it unites the fit with the unfit, the drunkard and the lunatic; and in the artificial conditions of modern life, it has been responsible for the evolution of a gigantic power, familiar to every woman in the civilized world today, by which, almost at will, she can control and restrict her productive output.

In natural conditions, if every one has room to "live his own life," doubtless every child is a definite asset in the family. The larger the family the more prosperous is the household. The old simple idea of marriage is that of a sacrament, in which the parents have a hallowed duty; to be fruitful, multiply and replenish the earth—have your quiver full, so as to be able to speak with your enemy in the gate. A divine providence watches over the estate of holy matrimony, and the law of marriage justified the exercise of natural instincts.

Modern ideas look at the subject in quite another light. The conditions of modern life are not natural, but highly artificial. The matrimonial outlook must be therefore readjusted. The struggle for existence has become too severe. The mother cannot be expected to exhaust herself for the sake of posterity. She deserves consideration in the first place. To preserve the home, to be a companion to her husband and to properly supervise the children (one, two or three), her health must be conserved.

Then the conservative maternal instinct comes in again. She has the keenest desire to further the interests of the children she has borne. The fewer, the more concentrated her affection and solicitude. The property, large or small, which may descend to them would be lessened for each if there were more. The weekly, monthly or yearly income of the bread-winner would leave the butter less thickly spread if there were more mouths to feed. It is no obviously selfish feeling among married women, but a rational notion of benefit to the family all around, by which she justifies herself in this restrictive policy; the husband's anxieties are lessened, the wife has more leisure and personal enjoyment of life, and the fewer children get more to eat and are better housed, clothed and educated than the full complement would be. The greater the number of children, the less food for each, and, in consequence, the greater risk of death, or disease, which—like tuberculosis—cripples and debases the race. Further, without this power of restricting families, there are many couples who would never have the courage, or occupy the financial position, to enter into marital relations; and the alternatives for such are supposed to be celibacy or vice.

It is not necessary to enter into details with regard to the methods adopted for voluntary restriction of the numbers in a family. They are common knowledge. Since 1832 the pamphlet of Robert Dale Owen, in which he openly advocates the restriction of families on grounds already referred to, has had an enormous sale in Europe and America. Bradlaugh's pamphlet, The Fruits of Philosophy, and Annie Besant's paper on The Law of Population, created a great sensation, and roused public opinion in the country thirty years ago. A book on the subject by "a medical man" forcibly advocating the use of means for the purpose of limiting the number of children, had in the year 1895 gone to 81,000 copies.

We are up against this knowledge in all circles of society, and nowadays only the poor have their full complement of children. C. B. Shaw recorded an important truth in his statement that "a striking feature of the latter half of the nineteenth century has been the sterilization of marriage."

It is the most gigantic power woman ever possessed; it is one which is in the hands of all women; and it is already producing tremendous effects, not merely on the individual and the family—though these are of the utmost importance—but upon the welfare of the various countries and nations in which these methods are practiced.

It cannot, I think, be argued that this new feminine agent for self-protection and self-preservation is likely to endanger public morality. It is essentially a cold-blooded, calculating method of having your cake and eating it. Its best safeguard as far as morality is concerned, is that it is not infallible. Mistakes are always occurring; risks are always being run. Moreover, one cannot conceive of a great passion satisfied with the intervention of artificial restrictions. Love breaks down all barriers, and would scorn "preventives." "Love me not at all, or all in all.'

Malthusianism.—The first scientific treatise touching on this problem was Malthus' memoir, published in 1798. He pointed out the relation of population to poverty, and showed conclusively the tendency of population to increase beyond the necessary means of subsistence. It never, however, gets beyond this point. Famine, pestilence, war and emigration are natural checks which continually preserve the balance of forces. During the early half of the nineteenth century the population of Great Britian is said to have doubled in fifty years, while that of the United States doubled in twenty-five years.

Malthus was alarmed at the rate of increase of the population. He made suggestions for limiting the population by (1) delay in marriage till a later period in life, and (2) by self-control and abstinence from marital relations, so as to balance the number of children and the means of subsistence in the family.

Neo-Malthusianism is really quite a different thing. Its object is the same as that of Malthus, but its means and methods are absolutely diverse. It asserts that you can have your cake and eat it. It gives up as apparently hopeless the idea of abstinence and continence, and provides for the limitation of families by means which leave the individuals in full enjoyment of physical pleasures. You can have your pleasure without any commensurate payment.

But that stands up against a root principle. You cannot have anything worth having without paying for it. The highest enjoyment in life has to be paid for in toil, anxiety and heartache. Why should this be allowed free?

The arguments in favor of the restrictive line of conduct are: Increased personal gratification, diminished personal responsibility, greater personal comfort and lessened strain and hardship. The sum of personal happiness is increased.

On the other hand, before accepting this new principle, there are powerful arguments on the other side—both personal and general.

From the point of view of the individual concerned in the first place, modern practices are disgusting and unnatural. Marriage is degraded. The responsibilities of marriage are evaded; the marriage ceremony might as well be omitted, and the wife is lowered to the level of a mistress.

Self-control is lessened. Malthusianism advocated abstinence and continence. Neo-Malthusianism thrives, because the consequences of indulgence are avoided.

But serious consequences follow that are clearly recognized by the medical profession, leading to disease of the female pelvic organs. Further, in both sexes, neurotic conditions are produced, such as neurasthenia, which of course, show themselves more markedly in the female.

The adoption of these methods makes marriage more of a social and commercial alliance than a mystic communion out of which the life of the race is to be continued.

There is another moral effect which is not without importance. Is the acquisition of greater personal pleasure a desirable aim? This is the keynote of the whole situation. Personal pleasure—"I am I"—"I must be free." It is self-assertion, self-importance and not self-control or self-denial. Does the highest happiness come through the avenue of self-indulgence? Or (if there is anything good in any religion) is it not by self-sacrifice that a man or a woman is ennobled and improved in character? And surely in this matter, the ultimate aim of the married who desire to limit their families, from whatever motive, should be to do so by self-control.

Contrast the Eastern woman with the modern European type. The one desire of the Eastern woman it to bear a man-child. That is her life-work. The Roman Catholic religion is worthy of profound respect and veneration if only on account of the exalted position in which it places woman, through the mother of the Son of God. Are not all women protected, exalted, purified in the minds of men by that singular type? Mary must always be to people with a religious instinct, the Type of Womanhood. She was without character, individuality, personal importance, or self-assertion; yet she is the most illustrious woman in history, because she is the mother of Jesus.

Through this modern practice both man and woman lose in dignity and in mutual respect. And the woman loses most. Men and women are, after all, only the instruments of their time; and service to the world they live in must be an essential payment for existence. Man is the bread-winner, the fighter, the protector. It is through his force that the world progresses. Woman binds up the home, and is the real head of the family. Under normal conditions and the more children she has—or, rather, the less she interferes with the laws of Nature—the happier is her life. She gets more devotion and solicitude from her husband, the more help from her children as they grow up, and she lives a natural and physiological life. She lives her life. So also for the man. All his energies are called forth to maintain his family; his better nature is educated in the protection and care he lavishes on the woman who, in response to the call of their united natures, is risking her life and strength for the life of the family and the nation.

Another important argument against restriction is to be found in the effect upon the children. In the first place, it always seems to be presumptous to interfere with Nature, and imagine that on the special occasion when a couple let loose their appetites, such an occasion will result in the best possible embryo. How is a couple to know what particular occasion is going to be Eugenic? Per contra., it is a well known fact that illegitimate children—"love children,"—the fruits of an overmastering passion, have often been examples of superior mental and physical power.

Further, the limitation of numbers to one, two or three, by concentrating parental care increases parental anxiety, and produces the worst possible effect upon the children. They tend to become selfish and self-centered, and so still further detract from the standard of character that must always be regarded as the best.

But the most important feature of family life is wanting in modern families. In a normal family there is always a struggle for existence, in which the weakest goes to the wall and the strongest is strengthened This can be applied to both physical and mental attributes. In the struggle for food the weak will be eliminated, and the stronger will survive. In the intellectual struggle the members of a large family stimulate one another; there is a necessary give and take; angles are rounded off; there is no mutual consideration, and a quality of sympathy is developed. Family life is a microcosm of the world, and the educational advantages of a large family fit a boy or girl for a wider sphere better than if he or she were alone, or with only one brother or sister. In a small family the children get too much consideration, and are liable to be injured and softened by doting, pampering parents.

"You cannot have your easy chair,
Your little boy is sitting there."

And last, and most important of all, we have the spectacle of civilization deliberately practicing race-suicide. These practices are absolutely inimical to the welfare of the race. They may increase personal comfort and lessen individual poverty, but they also tend to diminish the struggle for life, which is a fundamental principle among all living organisms. Population must always be beating up against poverty. But a diminished population is, after all, diminished wealth, power, resource, in a nation; and we know that the race, however populous, will always find the means of subsistence. Where would our Empire be today, if our great-grandmothers, grandmothers and mothers had followed modern methods, and had had two instead of seven or more children? Emigration has not only removed the surplus population of Great Britain and Ireland, but has been the means of building up great colonies like Australia and Canada. If the white race pursue this suicidal policy in future generations, the menace of the yellow and the black races will become overwhelming, and the white man will be over weighted in this struggle for racial supremacy.

I contend that Neo-Malthusianism stands condemned as injurious to the individuals concerned, to the children, born and unborn, and to the race and its future.

It is an important social question at the present moment. In its essence it is the question of the position of woman, and arises from her desire to assert herself, and to shake off the chains in which she has felt herself bound so long. The uprising of the militant suffragette is only another aspect of the same assertiveness of woman. She must have equal rights with man. She must be allowed to determine the limitations and the prerogatives of womankind. She thinks she is unfairly treated, and has an equal share of the duties and burdens and hardships of life.

This all seems to me to be crude and immature though. What is man's view of man's functions? "All true work is sacred; in all true work, were it but true hand labor, there is something of divineness. Labour, wide as the earth, has its summit in Heaven. Sweat of the brow; and up from that to sweat of the brain, sweat of the heart; which includes all Kepler calculations, Newton meditations, all sciences, all spoken Epics, all acted heroisms, martyrdoms—up to that, 'Agony of blooded sweat,' which all men have called divine! O brother, if this is not 'worship,' then I say, the more pity for worship; for this is the noblest thing yet discovered under God's sky. Who art thou that complainest of thy life of toil? Complain not. Look up, my wearied brother; see thy fellow workmen there, in God's eternity, surviving there, they alone surviving. Sacred band of the immortals, celestial body-guard of the empire of mankind. Even in the weak human memory they survive so long, as saints, as heroes, as Gods; they alone surviving peopling, they alone, the unmeasured solitudes of time! To thee Heaven, though severe, is not unkind, Heaven is kind—as a noble mother; as that Spartan mother, saying while she gave her son his shield, 'With it, my son, or upon it!' Complain not; the very Spartans did not complain."—*CARLYLE*, (*Past and Present.*)

Man recognizes that he cannot be a drone. He has to fulfil his destiny and earn his bread by the sweat of his brow. Women have begun to think; must they not go on to a little deeper thought? Have they not been sent into the world to do their life work, just as a man has? Is not their essential as well as their highest position in the Kosmos to be mothers, the heads of families, caring for the children, nurturing them, and thereby preserving, in family life and through family life, all that is clean and pure and wholesome, and receiving man's homage, and respect as the mothers of their children, and the nursing mothers of the race?

Women will have to realize that their first essential duty is child-bearing and the mothering of the race. The world cannot go on without that, and no other service that a woman can perform for the State is comparable to that which she gives in the sphere of family life. She is not needed in the arena where masculine force is exercised, any more than man is needed in woman's special sphere. The great influence which good women exercise in the world is through the exercise of the functions of motherhood, in its broadest sense.

No doubt things will right themselves as the years roll on. This may be only a passing phase. The world is too rich, and the cares of the world have diverted women from the normal path. She is at present only emerging from a chrysalis stage of thought, and in her desire for freedom, and for "living her own life," she looses sight of the higher plane in which she might exert nobler influence than she does at present. The glare of the arc lamps prevent her seeing the stars.

I have faith that old fashioned Malthusianism will hold its own, and that if any limitation of families is required, it will be through self control and continence. There is a marked difference between the youth of today and thirty years ago. Sexual matters are not so prominent in their minds. Young men are poorer and young women more courageous. Athletics have done a great service to both sexes, and especially to girls, by making their bodies and minds more vigorous and healthy.

While I have this hope, I have a strong conviction that the have-your-cake-and-eat-it policy of Neo-Malthusianism is wrong, and is producing more evil than good—by its effect on individuals, its effect on the family and its effect on the race.

Before concluding, I would refer briefly to a feature of this problem which seems to have an important bearing on the general question. There appears to be distinct evidence of a decline in the maternal instinct.

I have already drawn attention to this point incidentally. Further, in the discussion on the limitation of families it has been presumed that the restriction in numbers has been wilfully made. There is, however, no proof of this. It is, of course, impossible to discriminate between those families which are artificially restricted and those which are naturally smaller.

We have seen that the age at which marriages occur is becoming later, and the large number of childless marriages is glaringly obvious. There are cases actually known of women who in marrying bargain to have no children at all. These may be rare cases, but they are known to exist, showing a remarkable atrophy of the maternal instinct.

One remarkable and general characteristic among modern mothers is their inability to suckle their own children. Out of fifty personal acquaintances who have borne living children, only four have performed their natural functions. Doubtless some of the others could have done so in the first instance—but for the personal discomfort and the calls of society. But in the majority of cases there is an entire disability on the part of the mother to supply the child with its natural nutriment.

Of the causes of this diminished fertility and diminution in the maternal instinct, one can only speak very tentatively. It is possible a natural wave. It may be that the world is getting too full, and that this is Nature's method of delaying population for a while. But Nature is generally extravagant and wasteful in her breeding experiments. One is more inclined to look to economic conditions as a primary cause, and to lay stress on the changes in the mode of living in modern times. Modern luxury delays marriages; men and women then enter on its duties with more perspicuity and caution.

There is, moreover, a quite different life open to the modern young woman. She has learnt before marriage the delights of independence, and in consequence is less inclined to plunge into matrimonial servitude. She is also more physically capable.

The young woman of the present generation has grown enormously—she has grown to leg; and I would associate together the increase in the length of her lower limbs and the diminution in her maternal instinct. Tennis, the bicycle, hockey, golf, riding, etc. In short, the athletic development of the modern young woman has been associated with an increase of blood supply to the pelvic viscera. Today we have feminism and physical activity, in place of a generation who did crewel work and had large families.

To sum up my view, and conclude. The modern habit of restricting families is not Eugenic or scientific; nor is the custom in harmony with the laws of Nature. Stock-breeders, in their efforts to improve the breed, take every advantage of natural laws. But their efforts at improvement are not by limitation in the number of the progeny, but by improvement of the stock and of the environment. The modern limitation in number is a contravention of Nature, and therefore will ultimate in a result exactly the reverse of that desired—namely, a deterioration in the breed. From the point of view of the individual, the family, and the Empire, I consider this a very important national question which should receive the serious consideration of every lover of his country.

It is with the greatest interest and satisfaction that we notice that the Government—and Mr. Lloyd-George—are incidentally taking cognizance of the existence of this national calamity, in the new bill for improving the conditions of the (so-called) working classes, by the partial endowment of motherhood. But, as Eugenists, we must not shut our eyes to the fact that this is an evil which prevades all classes of the community—rural and urban—throughout the civilized world,and not only the working classes. The fit more than the unfit are damaging the race.

Before the attempt can be seriously made to improve your stock, as a practical breeder you must have the material in abundance to experiment upon.

A RESUME OF THE LITERATURE ON SARCOMA IN INFANCY AND EARLY CHILDHOOD.*

BY
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In the not far remote past the universal custom of clinicians was to group all malignant neoplasms under the general heading of cancer (crab), the karkinos of Galen, German krebs, Sanscrit karkata, etc.

"Cancer has been a constant subject of study, in all ages and in all nations, but the mystery of its origin has yet been unsolved, resistance to its progress has yet been unsuccessful, and the symbolic crab continues to sink its claws slowly but relentlessly into the flesh of its victim. The disease at first local becomes regional and constitutional; recurring when removed, disseminating when left; undergoing degeneration, intractable ulceration, deep spreading excavation, and is usually followed by cachexia and death."

Sarcoma was unrecognized as a definite type of malignant neoplasm until about fifty years ago when, as a result of the histological researches of Virchow, *et al.*, a large number of malignant tumors hitherto grouped under the heading of "cancer" were more accurately classified and thus separated from the true carcinomata. The spindle-cell, round-cell, etc., which had before been noted in different malignant neoplasms were isolated and adequately described. Thus it is said in differentiating between carcinoma and sarcoma Virchow and his followers relied largely upon the character of the neoplastic cells, their relationship to the reticulum, etc., and especially did they emphasize the apparent absence of well marked stroma and alveolar grouping of the cells in sarcoma.

As a rule sarcomata show an exceedingly fine inter-cellular network (reticulum) similar to the reticulum present in normal glandular structure, whereas the carcinomata have no intercellular network, which fact White suggests might be used as a point of differentiation in doubtful cases between carcinoma and sarcoma. In some examples of sarcoma the stroma is well marked, in others it is so fine as to be practically hidden by cells of the neoplasm; and in this connection Rindfleisch and others have called attention to the histological similarity between sarcoma and granuloma.

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*Read before the South Carolina Medical Association, April Meeting, 1911.

From a pathological standpoint it is understood the term sarcoma embraces all malignant neoplasms arising in tissues in mesoblastic origin, in contradistinction to carcinoma which represents malignant neoplasms arising in tissues of epiblastic and hypoblastic origin. According to Senn, sarcoma is an atypical proliferation of connective tissue cells from a matrix of fibrolasts of congenital or post-natal origin, a definition which acknowledges connective tissue as the sole origin of this neoplasm; and histological investigations have shown that sarcoma originating in any portion of the body always (primarily) begins in the connective tissue, other structures becoming implicated secondarily, *i. e.*, by extension. "Sarcoma springs from the subcutaneous or inter-muscular connective tissue, fascia, submucous and subserous connective tissue, the neuroglia of the central nervous system, the lymphoid tissue, the periosteum, the marrow of bone, and the stroma of other tumors "

It was for a long time believed that some varieties of malignant neoplasms were invariably encapsulated, and especially was this true of sarcoma, However, later investigations demonstrated this conception to be distinctly erroneous, and that "absence of a limiting capsule is common to all malignant tumors." Senn states that all benign tumors are encapsulated, *i. e.*, a well defined connective tissue partition is interposed between the tumor and the adjacent tissue, beyond which partition the tumor never extends. On the other hand that malignant tumors are devoid of such a limiting boundary line between tumor and surrounding tissues. In sarcoma a capsule is apparently often found, but pathologically it is absent because it is infiltrated with tumor-cells which permeate it and infect the adjacent tissues. In carcinoma there is never observed the least attempt at formation of a capsule.

The views of many other observers coincide with those of Senn, that in some forms of sarcoma microscopically a capsule appears to exist, but microscopic examination of the adjacent tissues demonstrates that neoplastic cells have migrated beyond the apparent capsule and implicated contiguous structures. This apparent encapsulation in sarcoma has in many instances deceived the surgeon and such neoplasms have been enucleated under the belief that they were distinctly benign. Absence of a limiting capsule naturally permits contact of the neoplasm and surrounding tissues thus giving rise to local infection. "The word 'infection' as applied to the process of dissemination of malignant tumors has a different significance than when the same term is applied to the origin and extension of acute and chronic infective diseases. In the latter case 'infection' signifies the presence in the tissues of pathogenic microbes which exert their specific pathogenic effect upon pre-existing tissues. The word 'infection' used to indicate the local, regional and general dissemination of malignant tumors means the separation from the primary tumor of cells which migrate into the surrounding connective tissue, giving rise to local infection, or which are transported through the lymphatics of the region occupied by the tumor, causing regional infection; or, lastly, the malignant cells find their way directly or indirectly into the general circulation and become arrested in some distant part or organ as tumor-emboli, resulting in general infection or general dissemination." (Senn.)

Unfortunately for humankind the etiology of malignant disease still remains submerged in apparent hopeless obscurity, and since nothing is definitely known it would be absurd to indulge in useless theoretical speculation thereon. While numerous conscientious and painstaking investigators in different parts of the world have faithfully labored for many years endeavoring to solve the problem, and have suggested and promulgated various fanciful and ingenious theories to explain the inception and development thereof, the question still remains unsolved as intimated at the outset there being yet no consensus of opinion concerning the real *fons et origo mali.* It was thought not very long ago that the specific etiologic factor (germ) had been certainly discovered and isolated, and that development and application of sero-therapy would definitely solve the question of rational treatment; but further investigation demonstrated the fallacy of the supposed discovery, and thus the anticipated curative serum also remains in oblivion.

Age at one time was presumed to have an important bearing upon the origin and development of malignant disease, *i. e.*, that neoplasms of this type did not attack the young, but the fallacy of this view has long since been clearly demonstrated and it is now well known that malignant disease (particularly sarcoma) is encountered quite as frequently during infancy, early childhood and adolescence, as in adult life and old age. Carcinoma, however, is observed more rarely although it is by no means unknown in those of tender years. Heredity was formerly believed to be an important factor in the etiology of malignant disease, but few clinicians of the present day admit more than a possible inherited predisposition or so-called susceptibility.

Much experimentation and study have been devoted to the contagiousness (or infectivity) of cancer, and many instances have been reported where the disease was apparently transmitted from one person to another in this manner; likewise, numerous observers claim to have reproduced malignant disease in animals by implantation of neoplastic fragments from the *genus homo.* It is claimed by Senn and others, however, that there is not a single well authenticated case on record in which the disease has been transmitted from man to man or from man to animal by contagion; likewise that the negative results which have followed thousands of attempts to reproduce carcinoma and sarcoma by implantation of fragments of tumor tissue in different animals furnish the most convincing proof of the non-contagiousness and non-parasitic character of malignant tumors.

While as already intimated it would be distinctly inappropriate for the writer to indulge in lengthy speculation upon the various etiological theories which have been accorded more or less professional prominence, since rehearsal of theoretical propositions would not materially contribute to eludication of observed facts, yet it may be said *en passant* that, regardless of the statements of Senn, *et al.*, the microbic (or parasitic) theory has much to recommend its general acceptance, although in the light of present knowledge it may be entirely insusceptible of adequate demonstration.

There are mentioned in the literature predisposing and contributing causative factors of malignant disease so numerous and diversified that mere enumeration thereof with appropriate commentaries would occupy many pages of this journal. Traumatism and inherited predisposition are accorded first consideration as contributing factors by most writers. However, as previously intimated, it is probable heredity has little influence.

The writer cannot conceive the possibility of either the spermatozoon or the ovum being the subject of malignant disease at the time of conception, which would be requisite to full acceptance of the theory of heredity! Irritation and trauma with resultant inflammatory action within the tissues may have an important bearing upon production of the disease. When it is remembered, however, that carcinoma and sarcoma oftentimes appear to be congenitally present, the theory concerning traumatism and irritation becomes extremely difficult of either intelligent understanding or adequate explanation, and the theory of heredity assumes greater import. Again, why malignant disease in one instance develops after infliction of slight trauma, and not in another under precisely similar circumstances; likewise, why the disease seldom follows severe traumatic injuries, is also difficult of elucidation. Further, the exact manner in which truma acts as a predisposing causative factor, except it be upon the theory of irritation and inflammation as already noted, has never been adequately explained; and certainly no one is willing to admit the existence of a more intimate relationship between inflammation and malignant disease, unless the microbic theory be accepted.

The statement requires no emphasis that any organ, structure or tissue of the human body in either infancy or old age may be attacked by malignant disease, and why in one instance the energy of the pathological process should be expended upon one certain organ or part, and in another upon remote and entirely different organs or structures, are observed facts which are incapable of satisfactory explanation upon any hypothesis thus far suggested. That the uterus, the breast, the lips, etc., are attacked with greater frequency than other organs or tissues, is of no especial interest in connection with this dissertation, except to remark that adult percentages when applied to infancy and early childhood do not appear to hold good, the reasons for which are obvious.

Sarcoma of the kidney is much more common than carcinoma, and is more often than otherwise encountered in children and young adults. The development of the neoplasm is usually exceedingly rapid and without operative intervention may reach enormous size before destroying life of the victim. Renal sarcomata weighing ten and more pounds have been extirpated. according to records in surgical literature; but as in the majority of instances the larger neoplasms were observed in adult life further reference thereto in this paper is not permissible. The tumor is generally smooth in outline and apparent fluctuation sometimes present has been the cause of serious diagnostic errors. The malignancy of renal sarcoma being exceedingly great, recurrence after surgical intervention is the almost invariable rule.

The diagnosis of renal sarcoma in either infancy or adult life does not generally present any unsurmountable difficulties. There is ordinarily the history of a rapidly developing tumor displacing the abdominal contents forward and toward the median line. Pain is an inconstant symptom and when present is usually due to secondary causes such as intestinal obstruction from presence of the neoplasm, pressure upon adjacent viscera, compression of the ureter, etc. When present as a primary symptom it is said to indicate a hard tumor, that it is almost invariably absent in the soft rapidly growing types Progressive emaciation and consequent loss in weight are uniformly observed, and as the neoplasm increases in size become the most prominent symptoms. According to Hennoch, abdominal tumor and emaciation constitute the two most reliable symptoms of renal sarcoma in children. The complexion is usually sallow, sometimes cachectic, and the little patient shows evidence of great weakness. Hematuria and irritability of the bladder are occasionally observed. When the neoplasm has attained considerable size, pressure symptoms and displacement of viscera supervene. There may be nausea, vomiting, constipation, edema, dyspnea, etc. According to Steele, the presence of a smooth, solid, ovoidal, indistinctly fluctuating tumor in one side of the abdomen, traceable to the loin, producing bulging of the flank, displacing the colon forward and toward the median line, may be considered almost positive evidence of renal sarcoma, especially when the history only extends over a few weeks. In some instances, however, development of the neoplasm is less rapid than indicated by Steele and others, and progressive emaciation may be noted several months before abdominal tumor is even suspected much less discovered. Such examples are recorded by Cartledge and several other observers.

About the only affections for which renal sarcoma is likely to be mistaken are hydronephrosis or pyonephrosis, and (when occurring on the right side) a markedly distended gall bladder.

Hemorrhage from the kidney in young children is always suggestive of malignant disease. By inflating the colon the retroperitoneal position of the neoplasm can be positively determined, since if the growth be intra-peritoneal it will naturally be displaced by the distended colon. Where it is doubtful whether the condition is sarcoma hydronephrosis or pyonephrosis, exploratory lumbar puncture will usually lead to a satisfactory conclusion. Moreover, in pyonephrosis examination of the urine will most likely throw considerable light on the subject, and if the ureter be completely obstructed lumbar puncture will demonstrate pus in the kidney pelvis.

According to Senn, girls appear to be more predisposed to primary sarcoma of the kidney than boys. This observation, however, does not appear to have been borne out by the experience of others, as all available statistics show practically the same percentage in boys and girls. The neoplasm may be composed of either spindle or large and small round cells. "The origin from a matrix of embryonal cells is well illustrated in sarcoma of the kidney by the frequency with which striped muscular fibers are found in the neoplasm. The tumor is usually soft, and cysts, large and small, are common. Hemorrhage into the cysts occurs frequently." Ascites may or may not be a concomitant symptom.

As additional aids in differential diagnosis Senn suggests that sarcoma ordinarily causes less pain than carcinoma, that benign tumors with the exception of those involving the nerves or their sheaths produce pain only when from their location or size they cause compression of sensitive nerves. Again, benign tumors usually develop slowly, malignant neoplasms rapidly, therefore the clinical behavior is important in attempted differentiation between benign and malignant growths. The age of the patient is of some import, as benign tumors are encountered most frequently before middle life, whereas malignant neoplasms as a rule attck those advanced in years. In this respect, however, sarcoma constitutes an exception, as it exempts no age, being found in children under ten as well as in persons far advanced in years.

The literature contains hundreds of examples of renal sarcoma in children, but sarcoma of the liver must be exceedingly rare as record of only a few undoubted instances can be found. Aldibert collected 51 cases of renal tumor operated upon in children, many of which were probably congenital. Of these 48 were malignant and three benign. Twenty deaths resulted from the operation direct, two-thirds of them from shock. In 11 cases recurrence took place in nine months, thus raising the total mortality to 78 per cent.

Of 130 cases of renal sarcoma mentioned by Taylor, 106 occurred during the first five years, and 57 in the first two years of life. The sexes were about equally divided. In Keyes' collection of 160 cases of renal sarcoma one-half occurred during the first ten years of life.

About 20 years ago Guillet claimed the mortality of operations for renal sarcoma was seventy per cent. A few years later Rovsing's statistics showed mortality of 25 per cent., and Heresco collected 165 cases in which the immediate operative mortality was only 20 per cent. Morris' first two patients died, the next ten recovered, but all the latter except one succumbed to recurrences.

Abbe reported two cases successfully operated upon. One was a child aged 13 months, the tumor weighed seven pounds and weight of the child after operation was only 15 pounds, but it recovered and remained well three years thereafter. The second was a child of two years, the tumor weighed two and a half pounds. Recovery took place and the child was well three years and nine months after operation. However, the writer understands Abbe subsequently admitted recurrence in both these cases, but he is unable to locate the later report.

Waller mentions 74 examples with a primary mortality of 36 per cent., which was increased in three years to about 90 per cent. Beyond the three year limit it is stated the percentage of cures was about five per cent

There is no darker chapter in surgery than that of nephrectomy for malignant tumors in children. In fact, to be guided by the early statistics, one would naturally hesitate before advising an operation with such unpromising results. Professional opinion has for a long time been much divided as to what to do in sarcoma of the kidney in children, many feeling that operation is practically unjustifiable. We do not believe, in the present knowledge of this subject, that this is good reasoning While the results of operation are far from encouraging, still statistics of the last decade have greatly improved the almost totally hopeless statistics of former years. We must assume that non-interference certainly means death, and if we could show a success of only five per cent., or even one per cent., the operation would become justifiable, (Cartledge).

Fischer says the majority of malignant growths in early life are sarcomatous, and some of the renal neoplasms are certainly congenital. The abdomen seems the most frequent location for malignant tumors in children, and they are usually found to be sarcoma of the kidney. Next in frequency neoplasms affecting the ovaries and testicles are noted in children, usually before the fifth year. Of 36 cases of supra-renal tumor collected by Williams one-third occurred in childhood and were invariably sarcomatous Such growths may occur in very early infancy, but uterine malignant disease is rare before the age of twenty.

Lebert and Guersant record epitheliomata of the introitus in girls three and a half years old. Malignant neoplasms of the ovaries also occur in infants and young children. Of 12 cases operated upon by Aldibert six were children between seven and nine, and one only four years old. Malignant disease of the gastro-intestinal tract is very rare in early life. Round cell sarcoma of the liver has a few times been reported in infants, oftentimes the neoplasms are recognized only on necropsy.

Cumston states he knows of no instance where primary carcinoma of the vagina was encountered under the age of 20. On the other hand sarcoma of the vagina in early childhood is not so rare, *e. g.*, Carpenter found record of twenty cases in children under 12 years, and says vaginal sarcoma is usually seen as multiple polypi, sessile or pedunculated, of firm consistence, or even gelatinous; that these polypi do not ulcerate, as a rule the inguinal and lumbar lymphatics are unaffected, the course of the disease is chronic and the result fatal. The uterus and bladder may be invaded and present polypoid excrescences, the recto-vaginal and vesico-vaginal septa, likewise the connective tissue at either side of the vagina, and the broad ligaments may be attacked by the process. The rectum does not usually become implicated.

So far as the writer is able to ascertain there have been less than 100 cases of grastic sarcoma recorded, the majority of which were in adult life. However, Finlayson reports a case of sarcoma of the stomach in a child of three and a half years. The case during life was a clinical puzzle, and after death proved to be a pathological rarity. Sarcoma involving the stomach, says the author, is uncommon at any age, and in early life it is extremely rare

Acker mentions sarcoma of the thymus and bronchial glands in a girl of seven whose brother and sister had hereditary syphilis. For five weeks the child had lost flesh, and a large swelling developed on the right side of the neck. The left side to the waist and the left side of the face and head became edematous. The left arm was enormously swollen. The following day the right side of the face and right arm began to swell, and death closed the scene. Autopsy showed the left mammary region infiltrated with fatty tissue; the left axillary space contained a large growth which extended over the clavicle pressing upon the left subclavian vein, and the right axilla presented a smaller growth; there was a large soft lobulated tumor in the superior mediastinum surrounding the trachea and great vessels and extending to and involving part of the upper lobe of the left lung. Microscopical examination showed the growths to be large round cell sarcoma.

Fischer reported a case of sarcoma of the lung where the growth occupied the normal site of the heart which had been pushed to the right axillary space, the apex beat being heard two finger's breadth below and to the right of the (right) nipple. The chief clinical features of interest were: rapid, irregular and sighing respiration; temperature over 100 degrees F.; constant and severe dyspnea; more or less cyanosis; pallor of the mucous membranes; rapid emaciation. There was also a lateral curvature of the spine (from left to right) in the dorsal region. The case was hopeless from a medical standpoint. The father and mother of the child were apparently normal, but the grandfather died from sarcoma.

LeConte, after reporting two instances of nephrectomy for sarcoma of the kidney in children with operative recovery, concludes:

(1) With modern methods the immediate mortality of the operation should be reduced to 15 per cent. or even lower.

(2) Operation should prolong the average duration of life, dating from the first symptom of the disease.

(3) The percentage of cases that will go three years or more without recurrence, the so called cures, will be greatly increased if the physician can make an early diagnosis and can

be assured of the fact that an immediate operation is proper and justifiable.

(4) When the ultimate results are fatal, the operation relieves the suffering of the patient, and makes death less painful.

(5) The status of the operation is certainly better than the English opinion of it as voiced by Keith who states that in young children it is doubtful whether it is ever right to operate; indeed, "such operations must be looked upon as surgical possiblities rather than as operations of advantage to the patient."

McKay records a case of sarcoma of the humerus removed by interscapulo-thoracic amputation. The patient, a boy aged eleven, five weeks previously had fallen from a vehicle alighting on his right shoulder. Shortly thereafter a swelling was noted in the deltoid region which rapidly increased in size, but there was little or no pain. Being unwilling to subject the patient to an extensive operation (it was the right arm) without being absolutely certain of the diagnosis, an incision was made into the tumor and a small portion removed, cut sections of which proved it to be a sarcoma. The interscapulo-thoracic operation was then performed, the subclavian artery and the axillary vein being ligated after the pectoral muscles had been reflected. The patient recovered.

(Continued in December Issue, 1911)

ON THE MEDICAL EXAMINATION OF CHILDREN REPORTED AS MENTALLY DEFECTIVE IN THE PUBLIC SCHOOLS.

BY
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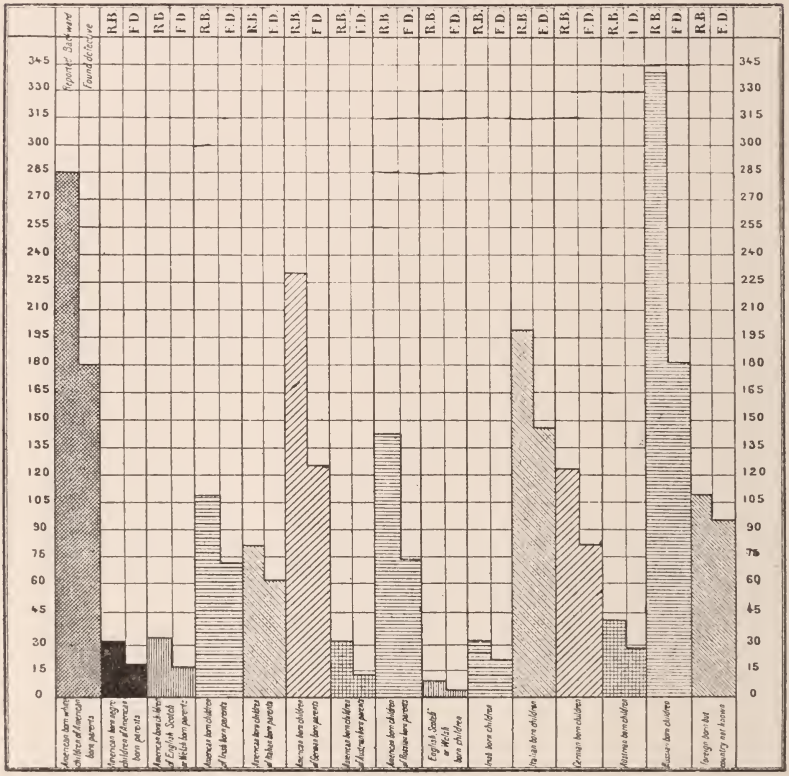
Different authorities, at home and abroad, have made more or less systematic studies of retarded, slow, or backward children as they are variously called. Some of these studies have been pursued with the idea of ascertaining the cause or causes of retardation; some with the avowed intent of finding a general and specific remedy regardless of cause, and some for the purpose of demonstrating the ultimate effects of such retardation on the social efficiency of the individual.

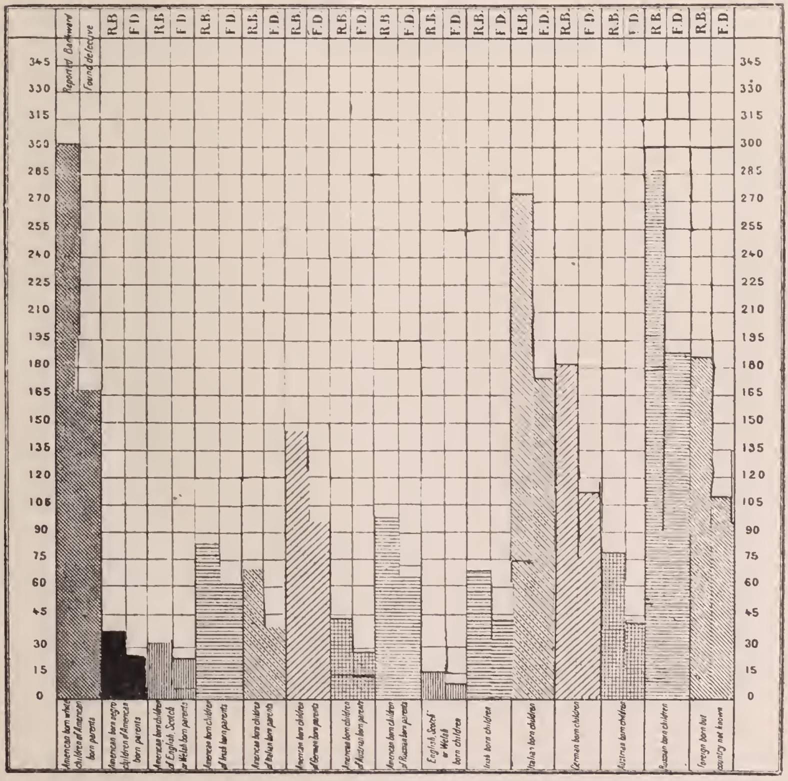
The data offered in this paper was collected in the course of the routine examination of 6245 school children in the public elementary schools of New York City and with no ultimate object in mind to be proven by the statistics obtained; some very interesting developments have become evident however and are offered herewith, unadulterated by any expression of personal opinion or theoretic deduction. The examinations are in three series, the first representing 1906 children between six and sixteen years of age; the second series 2222 children between the same ages; and the third series 2117 children between seven and fifteen years old. All the cases presented for these examinations were sent up by the schools on the presumption that they were mentally deficient. This presumption was variously arrived at by the pedagogical authorities presenting the cases; some child-

CHART I, Series No. 1



ren being reported because of their inability to advance in the grades without at least repeating each term; some cases reported had no other ground for presentation than a reputation for excessive "badness" or for chronic truancy; but some gave such physical and mental evidence of low grade imbecility or idiocy as to be unmistakable even to the least informed, average-minded layman. Of all cases in the three series 13 per cent.

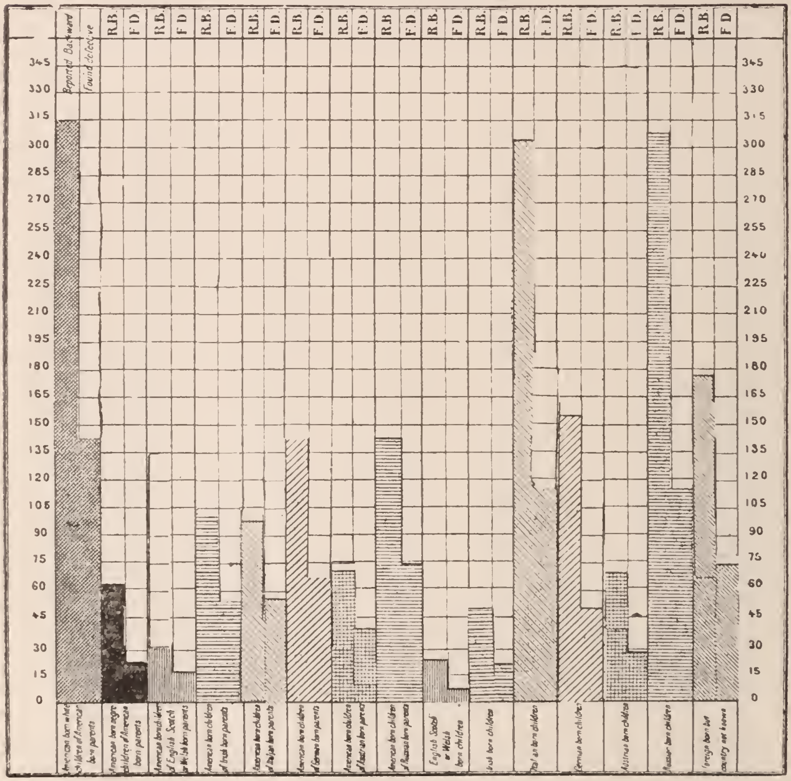
CHART II, Series 2



were truly institutional cases of mongolianism, imbecility or idiocy; 51.8 per cent. were found to be in need of some very specialized form of pedagogical training in order to develop the mentality present to its fullest extent. In looking at the nationalities of these various cases, one feels instinctively that the factor of language, *i. e.*, their inability to understand or speak English, may enter into the causes of backwardness since 53.8

per cent. of all the cases examined were foreign born children and 30.0 per cent., American born children of foreign parentage, but compared with the figures of those of institution type and those needing specialized training these figures have a different interest. Among the institution cases 61.1 per cent. were foreign born and 27.3 per cent. were of foreign parentage. Among the children considered candidates for the so-called ungraded classes 52.8 per cent. were foreign born and 24.5 per cent. were of foreign parentage. The following table gives the figures in parallel columns for easier reference:

CHART III, Series 3



	Foreign born	Foreign parents	American birth and parentage
All cases examined	53.8%	30.0%	16.2%
Ungraded class cases	52.8%	24.5%	22.7%
Institution cases	61.1%	27.3%	11.6%

There may be a factor of environment and racial inheritance to be noticed here as well as language; also general nutrition may account for some of the backwardness. In this same connection the nationality charts, Nos. 1, 2, 3 and 4, are of interest; in each there is a small percentage of cases uncharted (5.4 per cent. reported, 2.4 per cent. assigned in chart 1; 7.2 per cent. reported 2.8 per cent. assigned in chart 2; 6.6 per cent. reported, 2.6 per cent. assigned in chart 3; and 6.4 per cent. reported and 2.6 per cent. assigned in chart 4), because the individual nations were so sparsely represented. The following percentages of all examinations are also significant:

CHART IV, Totals

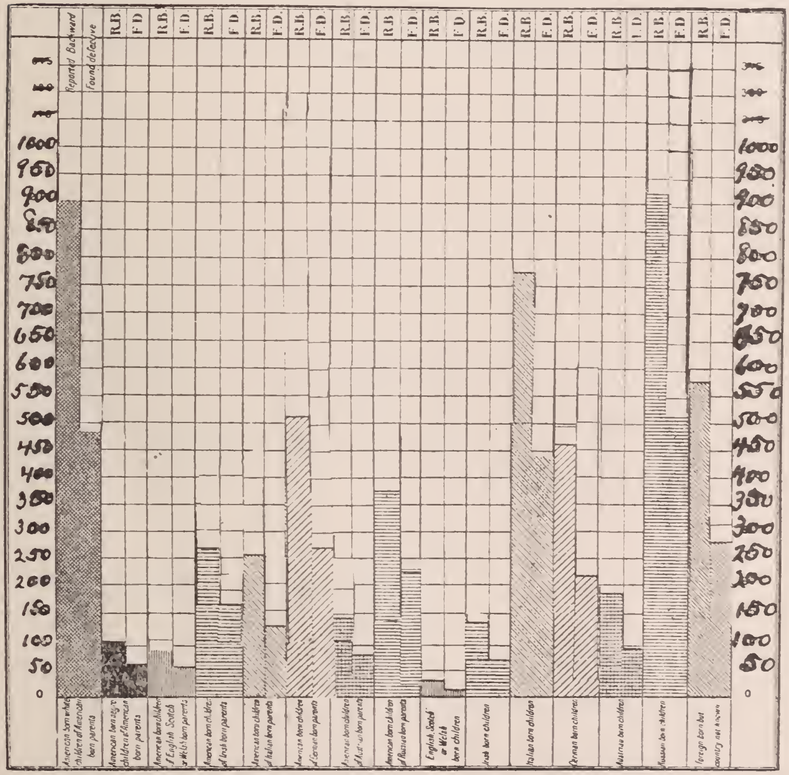


CHART V.

	Percentage of examined	Percentage of assigned	Percentage of cases of nationality examined which were assigned to ungraded classes
American born white parents.	14.5	15.0	54.0
American born negro parents.	2.1	2.0	49.6
American born, English, Scotch and Welsh parents.	1.5	1.6	56.9
American born Irish parents	4.5	5.2	61.2
American born Italian parents.	3.9	4.6	60.4
American born German parents.	8.2	8.7	54.8
American born Austrian parents.	2.3	2.5	55.5
American born Russian parents.	6.3	6.8	57.7
Foreign born, unknown country.	9.1	8.4	47.6
Eng., Scotch and Welsh birth.	0.7	0.6	38.7
Irish birth.	2.4	2.6	56.4
Italian birth	12.2	13.5	56.6
German birth.	7.3	7.5	53.2
Austrian birth.	3.0	2.9	51.3
Russian birth	14.9	16.0	56.3
All other countries.	7.1	2.1	18.7
	100.0	100.0	51.8

In this connection also the proportions of the sexes are of interest, 65.6 per cent. of all examined were boys and 67.4 per cent. of all assigned were boys. Chart VI serves to show the percentages of each sex examined and the percentage of those assigned in each nationality.

CHART VI.

	Percentage of all cases examined		Percentage of all cases examined	
	Boys	Girls	Boys	Girls
American born white parents.	15.5	13.5	14.3	15.7
American born negro parents.	2.9	1.3	2.2	1.8
American born English, Scotch and Welsh parents.	1.6	1.4	1.7	1.5
American born Irish parents.	4.7	4.3	5.0	5.4
American born Italian parents.	4.0	3.8	4.2	5.0
American born German parents.	7.5	8.9	8.9	8.5
American born Austrian parents.	2.3	2.3	2.7	2.3
American born Russian parents.	6.1	6.5	7.1	6.5
Foreign born, unknown country.	8.6	9.6	8.8	8.0
English, Scotch and Welsh born.	1.0	0.4	0.8	0.2
Irish birth.	2.8	2.0	2.9	2.3
Italian birth	14.0	10.4	13.2	13.8
German birth.	8.3	6.3	7.0	8.0
Austrian birth.	3.0	3.0	2.1	3.8
Russian birth	14.6	15.2	16.9	15.1
All other countries.	3.1	11.1	2.2	2.1
	100.0	100.0	100.0	100.0

Bearing in mind the relation which nutritional condition and physical environment are generally conceded to bear to the character of general mental efficiency, the proportions of individual defects found in the course of these examinations have a very pertinent interest and are graphically shown in chart VII. It must be reiterated that the children concerned in these examinations were all backward and the proportions of physical defects evidenced might reasonably—in the light of many statistical studies—be expected to be larger than among the general school population.

CHART VII.

	1st series		2nd series		3rd series		Total	
	Percentage of Examined	Percentage of assigned	Percentage of Examined	percentage of assigned	Percentage of Examined	Percentage of assigned	Percentage of Examined	Percentage of assigned
Eye defects..........	83.6	89.5	92.4	94.6	89.7	92.7	88.6	92.2
Ear diseases or deaf...	68.8	69.2	62.3	52.2	72.2	73.9	67.7	65.1
Defective teeth......	78.2	75.4	71.4	75.0	68.4	70.3	72.7	73.6
Tonsils alone enlarged.	36.5	34.8	32.5	30.8	31.0	29.6	33.2	31.4
Adenoids alone en'l'g'd	32.3	27.9	27.9	27.6	28.5	32.3	29.6	29.2
Tonsils and adenoids..	47.2	43.7	53.5	49.9	49.7	46.5	50.1	46.7
Speech defects.......	42.9	57.6	39.6	42.8	41.4	53.2	41.3	51.2
Epilepsy............	7.6	12.2	4.4	4.7	7.1	10.0	6.4	8.9
Chorea..............	5.3	5.5	3.7	3.9	4.2	5.8	4.4	5.1
Other neuroses.......	37.5	39.8	29.9	32.1	30.8	37.3	32.7	36.4
Tubercular suspects...	8.9	6.5	6.6	7.1	9.1	9.2	8.2	7.6
Cardiac weakness....	17.4	16.9	16.8	16.8	18.2	17.7	17.5	17.1
Nutritional disorders .	67.2	79.9	67.0	71.2	72.0	81.6	68 7	77.6

The large percentage of sensorial defects as well as general nutritional and neurotic disorders may have some relation to the degree of mental inadequacy since the proportions in all these conditions are so universally larger among those requiring the special training of the ungraded classes.

It would be extremely interesting, for the sake of comparison, if we could have a record of similar examinations from other large cities having a proportionately large foreign population, although this would probably be out of the question at the present time, for so far as we know, no other large center is directing so much time and attention to the problem of the mentally backward child.

Certainly the problem is a grave one, and fraught with serious consequences if public sentiment is not aroused to the magnitude of the increase in defective mentality, and if some definite legislation is not speedily enacted along the line of Eugenics.

ENTERITIS IN INFANTS AND ITS DIETETIC TREATMENT.*

BY

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Of all the subjects discussed by pediatricians today, diseases of the alimentary tract probably hold first place. Text-books in the past have been pretty well agreed in the matter of causes of bowel troubles, and our treatment has been based largely on those theories, but, of late, investigations along these lines, more or less revolutionary in character, have compelled us to modify our former views and even, in instances, to make a radical change.

Diarrheal diseases of infancy have never had a very definite line of demarcation, and this is rightly so, for it is practically impossible to have an inflammatory reaction in one spot without more or less trouble in other neighboring localities. We may have all grades, from a simple, acute enteritis involving the tract above and below, in a mild degree, to a chronic condition involving not only the gut itself, but the whole substance of the body.

Formerly, we believed the cause of diarrheal diseases to be largely of mechanical or bacterial origin, but investigations have demonstrated that we must modify our views in the matter. These are certainly factors, but not of as much importance as we once supposed. They are secondary, and increase the trouble when once begun. They act like teething to a neurotic child, simply as the "last straw which breaks the camel's back," and forces the matter to the attention of the family and physician. The real trouble begins before the diarrhea, and may have been at work for a long time undermining the system, and preparing the way for the more noticeable and acute symptoms.

Finkelstein and Meyer, in their recent investigations, have been able to demonstrate that the main cause of diarrhea in infancy is the disturbance of balance between food elements taken into the alimentary tract and food requirements, not alone in regard to quantity, but more particularly in regard to the relationship of individual constituents. Certain factors enter in which may make the ability of the child to assimilate elements vary to a consideable degree. Tuberculosis, syphilis, or deficient thryoid cases may so alter and weaken the system that very slight changes in the food elements quickly cause trouble. Excessive humidity of the atmosphere or poor surroundings may be an important predisposing cause, but even these cases can maintain their balance if the food is right. However, if there is any marked disturbance in balance for any considerable length of time, not only those weakened by systemic diseases, but normal, healthy children will become affected with diarrheal disorders.

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*Read before the Hennepin County Medical Society, April 3, 1911.

We formerly laid all the trouble, or the larger share of it, to our old friend the proteid, for we saw white curds in the stools and knowing the casein to form white curd we immediately said that our trouble was with proteid, and rested, but, basing our treatment on this supposition, oftentimes our cases did not improve. Once the balance is disturbed among the food elements, bacterial action may begin, our trouble is greatly augmented, and the situation is complicated, decomposition sets in, and absorption of toxins follows.

Pathologically, we find present all degrees of inflammation of the alimentary tract, from stomatitis to proctitis, and, in the more chronic cases, glandular hypertrophy and atrophy, cloudy kidney, and all grades of secondary anemia, depending on the severity of the intoxication and promptness of treatment.

The symptoms are well known: restlessness, loss of appetite, pain, fever according to the toxemia, frequent loose acid, green (supposedly due to the change of bilirubin to biliverdin), mucous, or bloody stools, with tenesmus. If chronic we are apt to find the main trouble in the large intestine, evidenced, not so much by fever, as emaciation with frequent, green, mucous, or bloody stools.

The treatment in such cases naturally is dependent on the cause. If secondary to a gastritis or a mechanical irritant, the stomach and intestines manifestly should be cleared first. For this purpose nothing is better than castor oil if there is no vomiting, or calomel if vomiting is present, but calomel itself produces a green stool and must not be discontinued simply because the stools are green. Stomach-washing with an alkaline solution to allay vomiting and dissolve mucous, is important, as well as a thorough irrigation of the lower bowel. Following this cleansing, a twenty-four hour rest with a little boiled water is certainly advisable. After this, proper food must be given, but here is where we come to the parting of the ways.

In a breast-fed child it is usually safe to follow with the breast on the third day, making a dilution by giving boiled water before each feeding and lengthening the intervals of feeding. Such dilution should be continued during excessively hot weather, since a child requires less food in summer than in winter. Breast-milk seems to have a certain bactericidal effect, hence we do not hesitate to return to it or use it in the midst of diarrheal disorders. In the bottle-fed the classical treatment has been initial cleansing of the tract, boiled water for twenty-four hours, then a course in barley water, whey, peptonized milk and modified raw milk. This method is on the supposition that the proteids are at fault. In such cases an analysis of the stools is of marked benefit, since it gives us a hint at what element is undigested. Curds may be present, and these may be proteid and fat, or either one. True curds formed by the action of HCl or lactic acid on the paracasein are hard, smooth, yellow outside and white within, with a cheesy odor, and will not dissolve in ether Fat curds are smaller, not so tough and do dissolve in ether. A foamy, bubbling acid stool is usually of sugar origin. The reaction is of value, for if our stool is alkaline and loose we have proteid decomposition; but if acid or even if the litmus is unchanged, acid fermentation is going on, due to the breaking down of fats and carbohydrates. Blood and mucous may be readily detected, but we should remember that a certain amount of mucous is normal if well mixed through the stool.

Since the examination of the stools has become common practice, we find the proteids less often at fault than was formerly supposed; in fact the curds we once supposed to be simply undigested casein often are only curds formed by substances in the lower bowel. We have learned that the fats and sugars play a more prominent part; also that the salts are to be reckoned with. Some investigators even are willing to lay all or most of the fault in diarrheal disorders to the salts and sugars in the milk, and believe that casein has no more harmful influence on infant digestion than water. They appear to have made their point good, for in their clinic the problem has been given a fair test Others in this country have demonstrated the same fact. Finkelstein claims to have taken groups of healthy infants, and by increasing the salts and sugars caused diarrheal disorders, the disorder being due to the fat in the presence of an excess of salts and sugar. Also groups of children with all varieties of enteritis, even to marasmic conditions, have been cured by reduction of salts and sugar constituents and being given an almost wholly casein diet.

The part that bacteria play in diarrheal disorders is, as we have said, secondary, and a hard matter to determine exactly, but we certainly do know that, once the balance of assimilation is disturbed, bacteria are very quick to assert themselves. Many varieties have been demonstrated—the ordinary colon bacillus, Shiga bacillus and others too numerous to mention, most of which are as yet but poorly understood. A few points however, have been demonstrated with considerable certainty, and one of them is that lactic acid bacilli seem to be inimical to the myriads of hostile bacteria within the tract. Also we note that the particular form bacillus acidophilus of the lactic acid group is normally found in the large intestine, and bacillus bulgaricus is normally found in the small intestine, the clinical significance of which fact will be referred to later.

With this knowledge before us the matter of treatment becomes all-important. If our case, by analysis of the stool, shows itself to be plainly one of proteid incapacity, a reduction of proteid is all that is necessary, provided the case has not gone on and formed lesions from bacterial action The same holds true of early fat, sugar, and salt irregularities. The dietetic treatment of such cases in the later stages has been rather varied, but agreeing in the main in certain important points, namely, reduction of sugars and fats, increase of casein and addition of lactic-acid bacteria. The different foods used are (1) plain buttermilk, (2) artificial buttermilk made from the two strains of lactic acid bacilli, (3) buttermilk cooked with flour and sugar, and (4) casein milk. Plain, fresh buttermilk, raw, has a composition of proteid 2.6; fat, .6; sugar, .3, and is used largely as an infant food in some countries, especially Holland. The chief advantages claimed for this food are that the fats and sugars especially are low, and the casein is coagulated in the form of casein lactate, and it contains much lactic acid and many lactic acid bacteria. This form of food is used in either acute or chronic conditions and at all ages. The disadvantage is that at first the infant may not like to take it, and it may even cause vomiting, but if persisted in it will show good results in three or four days. Trouble is often experienced in getting back on to fresh milk.

In its favor may be said that the stools quickly become normal, and the infant begins to gain in weight.

Artificial buttermilk made from the cultures is a good deal like the raw product, but can be controlled in the making more definitely. As was mentioned previously, two varieties of lactic acid bacteria are most used, the bacillus acidophilus, found normally in the large intestine and therefore used when the lesion seems more marked in that region, and the bacillus bulgaricus when the lesion is in the small intestine.

Buttermilk with flour and sugar added is frequently used. One quart of buttermilk is cooked for 20 minutes, suitable dilution with barley water is made, and cane sugar is added to make up the caloric value. The good results gotten from the use of this modified buttermilk cannot be due to the presence of lactic acid bacteria, since the food is sterilized by cooking, but the value seems to lie in the low fat, presence of lactic acid, and changed proteid.

Still another food used in diarrheal diseases is casein milk exploited largely by Finkelstein in his clinic. The method of preparation is as follows: Heat one quart of milk to 100 degrees F., add one-half ounce essence of pepsin, and stir well; allow to stand at same temperature one-half hour, then filter. Force the curd through a fine sieve several times, and add one pint of water and one pint of buttermilk. The composition of this mixture is, proteid, three per cent.; fat, 2.5 per cent.; sugar, 1.5 per cent.; salts, 0.5 per cent. One quart of it contains 370 calories. The food is used in all grades of intestinal disturbances, and the results have been very gratifying. This feeding can be used for some time till the stools are normal, and a gain in weight has begun, when return should be made to the regular milk mixtures.

In conclusion, I think we can safely say that the newer methods in the dietetic treatment of diarrheal disorders are a distinct advance over the old routine, although it is very hard to say just what element is the main factor in the treatment. The results, clincially, show that the diarrhea stops much quicker than by any other method, and a satisfactory gain in weight soon occurs. Care must be taken, however, that none of these forms of feeding be continued too long, for rickets and scurvy may occur, and have occurred, from a too long continuance of these seemingly irrational diets. The malted foods, especially malt soup, are valuable at this point to more rapidly increase the weight. Another important point to remember is that calorimetric standards must be maintained, for over-feeding is as bad as under-feeding or poor feeding.

We believe that this subject never will, or can, be arbitrarily settled, since the infant's stomach and the test tube never can be made to show like tests; but by a more thorough study of the end-products, chemically and bacterioligically, great improvements have become possible and the brilliant results obtained justify further study along these lines.—*N. W. Lancet*

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THE MANAGEMENT OF INFANTILE ECZEMA.*

BY

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Infantile eczema is one of the most commonly met with of diseases of the skin and for that reason alone a consideration of the manner of dealing with it should be of interest, but when we further consider that it is also one of the most intractable of skin disorders, occasions such great disturbance of mind on the part of the family of the afflicted infant and brings so much undeserved discredit upon the attending physician, it at once assumes a position of importance quite out of proportion to its real gravity as regards both its immediate and its ultimate effects.

I have intentionally chosen the term management rather than treatment because success in dealing with cases of this kind involves not only supervision of diet, clothing, hygiene of the skin, choice and manner of application of remedies; but also the control or prevention of the kindly attentions of relatives and friends, all of which can scarcely be included in our understanding of the term therapy.

A pre-requisite for success in the management of any disease

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*Incorporating resume of a paper published in the *Medical Age.*

is a proper conception of its nature and the manner of its origin, and while in the disease under consideration we cannot express its etiological relations in exact terms, we can nevertheless formulate certain theories which seem to explain its clinical phenomena.

In the first place infantile eczema is not primarily a disease of the skin but is the cutaneous expression of a disorder of nutrition or metabolism resulting in the absorption into the circulating blood of irritating substances which give rise to local or general vaso-motor disturbances the continuation of which leads to secondary pathological changes in the skin. That this is true is evidenced by the clinical course of all such cases in which the early symptoms are always purely erythematous in nature, coming and going with the variations in the vascular disturbance, and it is only after this process has been sufficiently long continued to result in nutritional disturbance in the skin itself, mechanical damage to it from scratching, and local infection because of lowered resistance that there is brought about the characteristic condition that we know as eczema.

The localization too of this form of eczema about the face and scalp is due partly, to the exceedingly sensitive vascular mechanism of these parts, the so-called flush areas, in which any disturbance of the circulation leads to marked erythema; and in part to the seborrhea which is practically always present to some extent on and about the infantile scalp, and which furnishes a very suitable basis upon which true eczema may be readily established.

Success then in dealing with this purely symptomatic affection of the skin will depend upon the degree of success we attain to in correcting the internal disturbance upon which it is dependent and whether the child be breast-fed or bottle-fed; its food must be carefully and rigidly regulated, as here usually is found the cause of the difficulty.

It is of course outside the province of this paper to attempt to deal with the question of infant feeding, than which no more difficult question confronts the physician. I wish however to emphasize the futility of attempting to deal with infantile eczema simply as a disease of the skin, and I am convinced that in each case there will be found some form of gastro-intestinal disturbance the correcting of which is a "*sine qua non*" to the successful employment of the external measures which alone will be dealt with in this paper.

The benefit to be derived from external applications for the relief of any diseased condition of the skin is dependent quite as much upon the manner in which the application is made as upon the choice of the remedy itself, and this is particularly true of eczema, in which the presence of crusts, scales and previous applications will, if not properly removed, preclude the possibility of benefit from remedies of any kind. So that water, so often spoken of as a thing to be avoided in eczema, is if properly used not only beneficial but absolutely indispensible, the damage that results being due usually rather to strong soap than to the water itself.

Excess of zeal in cleanliness too is quite a common fault, as the removal of the natural protecting and lubricating secretions of the delicate skin expose it to various forms of irritation. On the other hand proper hygiene is essential and every baby's skin should be kept free from extraneous matter of all kinds but not at the expense of too vigorous use of soap and water. Water alone in any diseased condition of the skin will often irritate and should always be made slightly alkaline with borax or sodium bicarbonate. If crusts and dried secretions are firmly adherent a few hours application of a poultice made from ℥i each of starch and boric acid in one pint of cold water will render them easily removable. Remedies to be effective must be applied directly to the diseased surface and this necessitates of course daily cleansing. Mild and soothing applications either lotions or ointments should be spread upon lint or thin layers of cotton and bound firmly, merely smearing then on is usually unsatisfactory and for this reason the thick pastes are extremely useful as a base for other remedies, as they are quite adherent and may be put on in thick layers.

The control of itching and the prevention of damage to the skin from scratching is one of the most difficult problems connected with the treatment of infantile eczema. Anti-pruritics are only partially successful and mechanical restraint of some kind is necessary. The child's sleeves may be pinned to the clothing or to the bed, or a pillow slip with a hole for the head may be drawn on and the arms pinned in along each side. The wearing of a face mask is sometimes advisable but it is difficult to have it properly made and it is very uncomfortable.

The X-ray is frequently recommended for the control itching but is uncertain in its action and the risk and difficulty of using it in very young children renders it highly inadvisable.

For the early erythematous eruption about the face a lotion as follows:

℞	Acid Carbolic	gr. x
	Magnes Carbonat	ʒi
	Zinc Oxide	ʒi
	Glycerine	ʒss
	Aqua Calcis	℥ii
	Aqua dest q.s	℥iv

applied two or three times a day with the conjoint use of a mild sulphur and salicylic ointment on the scalp to combat the seborrhea will be found usually sufficient if the toxic disturbance be also corrected.

If extensive weeping or oozing surfaces be present nothing is so effective and soothing as wet compresses of liq. plumbi subacetatis ʒi to a pint of cold water applied for twenty minutes three or four times a day and followed by the lotion above mentioned.

In more advanced cases particularly those in which crusts have been allowed to accumulate there is usually some considerable suppuration and mild antiseptics are necessary of which ammoniated mercury two per cent. with salicylic one-half per cent. in cold cream is one of the best and at the same time is of use in controlling itching. A few days use of such an ointment will usually dispose of the suppuration after which further treatment will depend upon conditions present.

In cases of some duration there is always a varying degree of thickening or induration of the skin the removal of which requires much patience and considerable ingenuity. Tar is the most effective agent for this purpose and to begin with may be used as in the following formula:

℞	Acid Carbolic	—
	Acid Salicylic aa	gr. iii
	Ung. picis liq.	ʒi
	Lassar paste q.s	℥i

This is applied in a thick layer over night and removed in the morning and the magnesia lotion kept on during the day. If benefit flags the salicylic acid may be increased to one per cent. and the tar gradually to ʒi to the ounce. In markedly thickened areas and particularly if excoriated or fissured painting with 10 per cent. solution of silver nitrate is often followed by rapid improvement and can be repeated in four or five days, this is particularly true in the excoriated and fissured condition so often seen about the ears.

In the scalp the ointment of ammoniated mercury and salicylic acid with an occasional addition of tar may be used throughout the whole course of treatment, as ointments containing powders should never be used in the scalp because of the difficulty of removal and here cleanliness is particularly essential.

Although infantile eczema in its typical form is ordinarily limited to the face and scalp, in long standing cases there is frequently a more or less extensive involvement of other parts of the body, usually most marked on the arms and legs. The form of eruption is ordinarily the papular with little or no tendency to weeping, but the itching is intense and demands relief. Ointments are rarely of service in the generalized cases and lotions and powders here find their greatest usefulness.

℞ Resorcine	
Sodii Boratis aa	ʒi
Glycerine	ʒss
Aqua Camphori	℥ij
Aqua dest q.s	℥iv

May be applied two or three times a day and after drying followed by a powder.

℞ Camphori pulv.	ʒss
Acid. Boric	ʒi
Talcum pulv. q.s	℥i

More actively inflammatory or indurated patches should be treated according to the plans previously described.

Even a very limited experience in the treatment of infantile eczema will convince one that no single plan of proceedure will apply to all cases or to any one case at different times, the disease is a most capricious one and demands the most careful watching and resourcefulness in handling, with frequent change in the composition of the external remedies used. It is better however to become familiar with the possibilities of a few remedies and to use them in varying strengths than to constantly be trying new ones.

Such in brief outline is the plan of management which has been most nearly successful in my hands, such a plan must of course be modified to meet variations in conditions as they arise and is offered only as a tentative suggestion. Difficulties will always be met with and one should always be guarded in giving a prognosis particularly as to the time required for a cure.

Conclusions.

1. That infantile eczema is not primarily a disease of the skin but is a cutaneous symptom of some internal disorder.

2. That treatment directed toward the skin disturbance will be of little avail unless the basic internal disorder be at the same time corrected.

3. That the management of infantile eczema involves correction of dietary faults and disturbances, the maintainence of proper cleanliness of the skin, the careful selection and application of remedies, the prevention of mechanical damage to the skin from scratching, and last but not least, much patience and perserverence.

SOCIETY TRANSACTIONS

NEW YORK ACADEMY OF MEDICINE. SECTION ON PEDIATRICS

On the evening of October 6, a meeting was held in the New York Academy Building under the auspices of the Section on Pediatrics, which was mainly devoted to a discussion of infantile mortality, chiefly in its relation to the milk supply.

Dr. Godfrey R. Pisek read a paper on the influence of milk station work on the reduction of infant mortality. In this paper he gave a description of the work done by the milk stations of New York City during the past summer and the results thereof. He pointed out that New York presented a problem in the reduction of infant mortality more difficult by far than that presented by most cities. Every year in the City 125,000 babies were born and it was felt that if success could be demonstrated here, the movement would become general and the appalling infantile mortality revealed by the last census would be correspondingly reduced. The New York Committee for the Reduction of Infant Mortality had raised by means of voluntary contributions an amount of money sufficient to establish 31 milk depots and had secured assistance towards the maintenance of 15 more stations under the control of the Department of Health. At the beginning of the summer there were 79 milk stations, including those of the Strauss Laboratories, the Diet Kitchen, the Babies' Dairies and two stations supported by the Nurses' Settlement and the Morningside Milk Dispensary The total number of infants enrolled at these stations on July 1st was 5,932; by the end of the month there were 9,888; and at the end of August the enrollment was 11,702. These stations dispensed weekly 74,000 quarts of milk. The stations were now not designed in the first instance for the distribution of milk, the education of mothers had come to the front and doctors and nurses were the more important factors. The nurses taught the mothers how to modify milk in accordance with the doctor's instructions. The routine modification at the stations was the dilution of whole milk with simple gruels and the addition of ordinary granulated sugar. The milk employed was a good, new product, saved from deterioration in the houses by simple home-made ice boxes. Knowing that the work in New York City was being watched by cities throughout the country it had been decided to issue a weekly bulletin giving comparative statistics in infant mortality in the various cities. Three hundred and fifty-five health officers had been communicated with, 79 of whom expressed willingness to give statistics, while the others stated that their vital statistics were so imperfect that they would be of little value, this showing the need for a National and State clearing house of information relating to infant mortality. Statistics showed that the work of the summer had been effective. The number of deaths from all causes for the first nine months of the year had been 11,733, while during the corresponding period of 1910 the number of deaths had reached 12,920, or, in other words, a rate of 124.6 per 1,000 infants this year against a rate of 142.3 for 1910, a decrease of 17.7 per 1,000 infants. In the Borough of Manhattan, from January 1st to June 1st there was an increase in the number of infant deaths of 28 per cent. over the corresponding period of 1910, but during the month of June, after the milk Campaign had been begun, there was a decrease in mortality of 50 per cent. from that of last year.

To prove the effectiveness of the campaign, comparative studies were made in different districts of the City. For instance, two equally congested districts were taken for comparison. In one district, having a milk station there were 419 deaths in 1910; in 1911 there were 298, a gain over last year of 29 per cent. In the other district having no milk station, there were 302 deaths in 1910 and 333 in 1911 or an increase of nine per cent. Dr. Pisek urged the members of the profession to support the Health Commissioner in his attempt to obtain an appropriation sufficient to carry on the work throughout the year.

Infant Mortality vs. Unwholesome Milk

Dr. S. Josephine Baker read a paper on the Principles of the Reduction of Infant Mortality with Suggestions for Future Work. She said in part that from their present knowledge they could formulate one fundamental principle with certainty, namely, that prevention of disease must be their aim, and education their main effort. That the educational work of recent years was beginning to bear fruit was shown by the fact that the reduction in infant mortality was constant over the entire country both in rural and urban districts notwithstanding the periods of heat which were more protracted and intense than for many previous years. If infant mortality was to be definitely and permanently lowered; public opinion must be stimulated to demand that all civic forces be so adjusted and co-ordinated that the babies might be allowed to live, instead of forced into illness and doomed to die.

Public opinion could insist upon better housing conditions, with sunlight and fresh air in living apartments, upon clean streets, adequate water supply, increased park space, playgrounds, recreation centers, the use of docks for breezes from the water-fronts. Public opinion could place in the hands of the Health Department sufficient funds to carry out a widespread campaign for the instruction of mothers in the care of infants, and the provision of a sufficient number of milk stations to meet the needs of the infant population, and then could uphold the wise expenditures of these funds with intelligent criticism and interest in results. Specifically the principles for the reduction of infant mortality included: (1). The study of the problem of the institution baby. During the present year up to October 1st, 42 per cent. of all infant deaths in the Borough of Manhattan had occurred in institutions. (2). A supply of milk, safe for infant feeding at a price within the reach of the majority of the people. Purification could not take the place of purity, but the matter was economic, and purity seemed beyond our reach at the price we could pay. (3). The broadening of the cause in pediatrics in the medical colleges so that they assumed the importance that was their due and assured every physician a thorough knowledge of infant hygiene and care. (4). The interest of social students and workers, and of philanthropists in meeting individual family needs and adjusting economic conditions. (5). The instruction of each mother as to the necessity of nursing her baby, and if that was impossible, then in the proper substitute feeding and how she might take advantage and apply the essential methods of hygienic baby care. The number of deaths from diarrheal diseases from January 1st to October 1st was 3,227 or a death rate of 34.2 per thousand infants, as against 4,011 deaths, or a rate of 44.2 per thousand infants for the year 1910. They had never before had so low a death rate, or so systematic a campaign in New York City. The death rate among babies cared for by the milk stations were 2.5 per cent. of the entire number cared for. Dr. Baker sketched the work of the Department of Child Hygiene of the Department of Health and urged the initiation of a still more comprehensive program for future achievement, the broad features of which she outlined. Dr. Baker ended an instructive paper by laying stress on the point that it was essential to recognize the fact that infant mortality was an all year round proposition. The time to save the baby was before it got sick. Their educational campaign should be carried on in the winter as well as in the summer and their vigilance should never relax. Until this lesson had been learned and provision made for persistent effort throughout the entire year they could never be wholly successful.

Pure Milk an Impossibility

Health Commissioner, Dr. G. J. Lederle gave a resume of his plans in connection with the milk question for the coming year and asked the members of the Academy to stand behind the Department in its efforts to obtain an appropriation from the Board of Estimate to enable it to open seventy milk stations in Manhattan and Brooklyn. Dr. Lederle said that at least, 1200 infants had been saved in the past nine months by the improved quality of milk that had been supplied and by the campaign of education that had been carried on. He further said that the milk question had become a great economic problem and that it was, in his opinion, impossible in a city like New York, where 1,000,000 quarts of milk are used daily to have every quart pure enough for infant feeding. Such a course, he said is neither required nor economical and to solve the problem which confronted the Department he had prepared a schedule, sub-dividing the milk supply into three classes, for infants and children, for adults and for cooking purposes.

Dr. W. A. Evans, Ex-commissioner of Health of Chicago, said that one-third of the people of Chicago died from what was termed "bad air" disease; one-third died from infant diseases; while the remaining one-third died from all the other things combined. It was therefore evident that this was a field which should be cleared up. From an economic standpoint it was worth while, for there was nothing in dead or neglected babies. Dr. Philip Van Ingen, Dr. Henry Dwight Chapin, Dr. L. Emmett Holt, Dr. William P. Northrup and Dr. A. Jacobi joined in the discussion. Dr. Jacobi drew attention to the fact that a large number of cases died before the child was one week or one month old. It was not a question of milk stations exclusively; it was a question of nursing from the very first. What could be done for the newly born baby should be done by the mother if she were capable. The mothers themselves, however, were not properly cared for. As a rule, of 100 women, if properly fed and instructed, at least 95 were able to nurse their babies. These did not want milk stations; they had their milk stations in their own breasts. The mother should be cared for before the baby was born and particularly after.

Acute Poliomyelitis said to be Caused by Infected Dust.—At a meeting of the Neurological Section of the New York Academy of Mecidine held in the Academy Building on Tuesday evening, October 11, Dr. Marcus Neustaedter related the results of a series of experiments conducted by him and Dr. William C. Thro of Cornell Medical College for the purpose of investigating the manner of spread of acute poliomyelitis. Dr. Neustaedter first laid down the following axioms. (1). That the disease is eminently an infantile ailment and prevails principally among the very youngest children, those that play on the floor; (2). That the disease is one that occurs mostly in the dry season; (3). That the character of the neighborhood and the living premises in which it is found does not play a material part in its spread—that, in fact, it may occur anywhere; (4). That children in the same family may be attacked one after the other and that in a given house children may be attacked in different families in fairly quick succession and along the lines of neighborly communication. (5). That the upper air passages appear to be the channels of infection.

Summing up the results of experiments on six monkeys, Dr. Neustaedter said that the first monkey had been injected with the sweepings of rooms in which had been children suffering from the disease of from three to six months standing, after the beginning of the paralysis. This monkey had given no results. The second monkey injected in a similar manner had given results of a doubtful but of apparently negative value. The third monkey thus injected had given results of a doubtful but of apparently positive value; the fifth monkey injected had given results of undoubtedly positive value; the fourth monkey injected with seemingly virulent mucous had given results of no value with sweepings but had given evidence of the disease from which he had recovered and had then been injected with emulsions from the brain and spinal cord of the fifth monkey had contracted the disease in a violent form and this last experiment injecting an emulsion of the brain and Spinal Cord of an infected monkey into the sixth monkey had caused the disease to manifest itself in him in an indisputable way.

Rhesus monkeys were used in all the experiments. Dr. Neustaedter said that he and Dr. Thro were convinced that the urine of infantile paralysis lurks in the dust and obtains its entrance to the system through the nasopharynx.

RETROSPECT OF CURRENT PEDIATRIC LITERATURE.

Infectious Diseases

Under the Charge of

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The Vaccine Treatment of Typhoid Fever.—Drs. W. H. Watters and C. A. Eaton of Boston give valuable information concerning the treatment of typhoid fever with vaccine. The statistics given by these authors in the *Medical Record*, May 6, 1911, and the statistics of other authors is very favorable to the use of vaccine as a means of reducing the fever and severity of typhoid fever both in children and in adults. Drs. Watters and Eaton point to the statistics of Chantemesse who treated 1000 cases of typhoid fever using vaccine and had a mortality of four per cent.

During the year of 1910 there were no deaths from typhoid fever in a large number of cases treated under their direction with vaccine as compared with a mortality of 20 per cent. in those cases not treated with vaccine.

Thirty-five cases are reported in detail. No injury or aggrevation of any kind was demonstrable as a result of any inoculation.

There is a tendency to decrease rather than to increase the size of the dose, particularly in making the second and subsequent inoculation smaller than the first. The more serious the condition of the patient the smaller the dose employed. One case that seemed hopeless was given a dose of one or two million and followed by gradual change for the better.

The cases reported are children and adults. The children treated with vaccine, as reported were five in number. A boy fourteen years of age began to improve within twelve hours after the first inoculation and after a second dose of vaccine the improvement was even more rapid. A child five years old after being given vaccine made rapid improvement. A child six years old began to improve rapidly after the first dose of vaccine on the eleventh day, convalescence was rapid. In the case of a boy aged eight brought to the hospital acutely delirious he became more quiet and made a steady recovery after receiving the vaccine. One boy received an inoculation on the sixth day after the temperature had been between 103 and 104. It was followed by an immediate decline of about two degrees. A second inoculation on the eleventh day was followed by a still further decline to normal on the sixteenth day.

The work that has been done shows that vaccine is a valuable aid to the treatment of typhoid fever if used properly.

We cannot overestimate the value of vaccinating a child before sending him to the country for the summer months.

Unusual Localizations of Diphtheria.—(*Le Med. Prat.*,' July 26, 1910; *abst.* '*Med. Rev. of Rev.*,' 1910, p. 606). Terrien has called attention to an unusual localisation of diphtheria. He refers to the involvement of adenoid vegetations in the pharynx in the diphtheritic process. The following symptoms were noted: There was a marked coryza with a profuse discharge, which soon became sanious; there followed symptoms of croup and of diphtheritic bronchitis with progressive and continuous dyspnea. In addition there was interference with nasal respiration, hoarseness, pain in the ear, swelling of the glands in the neck, a rapid pulse and great prostration. In the presence of such symptoms diphtheria should be suspected, cultures taken from the pharynx and the nose, and, if possible, rhinoscopy performed.

Treatment of Measles.—The use of calcium sulphide every half an hour in centigram doses until the perspiration exhales the odor of sulphureted hydrogen is recommended for measles by W. C. Abbott, (*Medical Times*, Jan. 1911). Saturation may be produced within two days after which time three grains may be given daily. This dose may be continued indefinitely without harm to the patient.

Dr. Ussher the medical missionary in Syria aroused much interest in calcium sulphide, which he used in the treatment of many diseases both for its prophylactic and curative value. More than thirty years ago, as pointed out by Dr. Abbott, a French physician, Fontaine of Bar-sur-Aube, announced that he had found a specific for diphtheria in calcium sulphide. Calcium sulphide was gaining in favor when anti-toxine supplanted it.

Fecal toxemia should be removed, calomel followed by a saline laxative is to be preferred. The danger points in measles are the overwhelming onset, hyperpyrexia and pulmonary complications.

For the overwhelming onset Dr. Abbott recommends glonin, atropine and strychnine.

In measles we have to deal with a fever that may go higher than any other infectious disease produces with the exception of scarlet fever. In scarlet fever we sometimes find a fever of 112 degrees F. while in measles we rarely find a fever higher than 109 degrees F. The tax on the brain is so great that it is important to reduce the fever as soon as possible, for this aconite, veratrine and digitalis are recommended; half a milligram of each alkaloid and a milligram of the glucoside may be given every hour.

Ipecacuahana is to be used for the respiratory features with more value than any other drug. The author recommends neuclein hypodermatically each day until convalescence is established. Pulsatilla is recommended by the same author as of great service in measles.

The Contagiousness of Whooping-Cough.—(*'Gaz. des Hop.,'* 1911, lxxxiv, p. 69).—Lesage and Collin.—Every case of whooping-cough is accompanied by a rise in the specific gravity of the urine and by an increase in the uric acid, as well as by lymphocytosis and characteristic expectoration. The end of the contagious period corresponds clinically with the cessation of expectoration, a marked diminution in the number of the nocturnal paroxysms, and a return to normal of the blood and urine. The duration of the isolation period can thus be settled. There is no justification for regarding as a prolonged attack a morbid state which is characterized merely by the persistence of the whoop. In the absence of a definite relapse the persistence of the whoop beyond a month if the blood and urine are normal indicates that the cough has become a tic for which firm moral treatment is required. M. Regnault, (*'Theses de Paris,'* 1910–11, No. 238), in a thesis in which the above views are incorporated, records thirteen illustrative cases observed in Lesage's wards at the Hospital Herold.

The Nature and Virus of Measles.—Drs. Joseph Goldberger and J. F. Anderson of the Hygienic Laboratory, Washington, have studied the nature and virus of measles, (*J. A. M. A.*, Sept 16, 1911). They found that the virus of measles passed through a Berkfeld filter. The experimental work was done on monkeys.

Experiments regarding the resisting power of the virus showed that the virus in the circulating blood of measles may resist dessication for 24 hours. Defibrinated monkey blood was put in a Petri dish and this with its cover tilted, placed over concentrated sulphuric acid in a dessicator. The air was quickly exhausted from this apparatus and it was placed in a cool room at 15 degrees C. At the end of 24 hours the blood was found as a dry scale. This was rubbed up and used for inoculation. The inoculation showed the virus still capable of producing the disease.

The virus was tested for heat and it was found that heat at 57 degrees C. so destroyed the virus that inoculation did not give the disease.

Freezing did not destroy the virus. The defibrinated monkey blood was kept frozen for 24 hours, at the end of which time inoculation produced symptoms of the disease.

It is significant that the virus is destroyed by heat but not by cold. The disease is more prevalent in the winter.

Urobilinuria in Measles.—Urobilinuria was found in 92 per cent. of the cases examined in the course of measles by Rach and Reuss. Fifty-one cases were examined. The condition rarely lasted more than a few days and was usually mild never reaching the intensity found in scarlet fever.

When urobilinuria was protracted there was always some complication.—(*J. A. M. A.*, Sept. 16, 1911, page 1015.)

Relapse of Diphtheria After Measles.—(*'Bull. et mem. de la Soc. Med. des Hop. de Paris,'* 1911, xxxi, p. 254). L. Martin and H. Darre. A boy aged three years, was admitted to hospital on January 11, 1911, with mild laryngeal diphtheria, which was treated with anti-toxin, and was discharged on the 28th. On February 12 he developed measles, and on the 15th severe faucial vaginal discharge, examination of which showed an absence of gonococci. The following day diphtheria bacilli were found in pure culture in a smear taken from the labia minora; 2000 units were injected, and within 24 hours the urinary symptoms had begun to subside; 5000 units were subsequently given, and in a day or two the symptoms had entirely subsided. A greyish-white membrane separated from the nympae and labia majora. Subsequent recovery was uneventful. The child had probably been affected by using the same bath-towel as a visitor who had been exposed to diphtheria, and had been suffering from a "cold" during her stay.

Primary Diphtheria of the External Urinary Meatus.—'*Practietioner*,' 1910, ii, p. 724). Alfred Howell records a case of the above in a little girl, aged nine years. The child was brought for advice regarding what the mother thought was a "blood-clot" in the front passage. Local examination revealed a purplish, angry-looking swelling, occupying the position of the external urinary meatus and its immediate neighborhood, rounded in outline, reaching below the base of the hymen and completely hiding the latter. The center of the swelling was depressed and admitted with difficulty a small catheter. Urine was drawn off and showed nothing abnormal. Several punched-out ulcers were to be seen around the margin of the depression, and a thin, sanious discharge exuded from the whole surface; no false membrane was seen. Constitutional symptoms were absent, and while the swelling was tender to the touch there was no complaint of pain, even during or after micturition. There was no history of any local injury or previous disease. Rest in bed, a sedative lotion locally, and an alkaline mixture internally failed to effect any improvement. Bacteriological examination demonstrated the presence of the Klebs-Loeffler bacillus. Two thousand units of antitoxin were injected and the condition subsequently quickly cleared up. Apart from slight redness of the part, which persisted for some time, the child showed no complications or sequelae. The author thinks the following points worthy of note: (*a*) the source and localisation of the infection; (*b*) the absence of constitutional symptoms; (*c*) absence of pain and presence of relatively little tenderness.

Mumps and the Ear.—Gradenigo has reported a case of a boy five years old whose smaller brother had mumps. The older had pains and swelling in the testicle, which subsided under cold application. The next day deafness suddenly developed and was permanent. There were no symptoms of the parotid gland at any time. A similar case was reported by Haike, the case being a young man aged nineteen who suddenly became deaf after a few days of malaise. Three days later bilateral orchitis developed with high fever and much depression. The mumps affected the internal ear first and permanent deafness resulted.—(*J. A. M. A.*, Sept. 16, 1911, page 1015.)

Ophthalmia Neonatorum.—McReynolds (*Texas State Journal of Medicine*), says that the question of causation is very apt, indeed, to occasion much speculation on the part of certain members of the family, and the preservation of the eyes may be determined sometimes by a judicious and tactful presentation of the facts to the father of the child. It will not be necessary before instituting appropriate treatment to acsertain by microscopical examination the special form of micro-organisms prevalent in the pus. But this much can safely be stated to the father, that the condition of the child's eyes depends upon the existence of a contagious discharge on the part of the mother, and that this infection is sometimes innocently acquired and sometimes communicated by the father to the mother. And thus we are relieved of the unpleasant task of making a dogmatic accusation; at the same time we can sufficiently impress the father with the seriousness of the case and his possible responsibility for the same with the result of inducing him to spare no expense for an adequate and efficient nursing, which we know will be absolutely essential to the successful management of the affection.

The most important duty of the medical profession relates to the prophylaxis, and this is chiefly in the hands of the general practitioner in the capacity of obstetrician. Crede's prophylactic method acts beneficially in two ways: it not only tends to destroy directly the micro-organisms themselves, but by the coagulation of albumin it mechanically imprisons the germs not actually destroyed and this facilitates their prompt and complete removal.

A great deal of discussion has arisen among ophthalmologists with regard to the use of the cold and heat in ophthalmia neonatorum. But the reasoning is in favor of hot applications after the initial period has passed, especially when there has developed a deep-seated involvement of the cornea and iris. The factor which is by far the most important relates to the preservation of the cornea intact. And heat rather than cold favors an active circulation with the resulting increase in the process of nutrition.

Infant Feeding in Health and Disease

Under the Charge of

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Artificial Feeding of Infants.—Dr. J. Snowman of England in the *Lancet* says when an infant is submitted to artificial feeding three important factors must be considered: (1) the quality of the food; (2) the quantity; (3) the frequency of administration. Dr. Snowman maintains that the quantity of food that an infant requires for the purpose of growth, maintenance of temperature and as a source of energy, does not depend on the infant's age but on its weight and surface area. The following may be taken as a fair average:

Weight of infant	Amount of feed
6½ lbs	1½ ounces
8½ "	2¼ "
11 "	3 "
13 "	3½ "
15 "	4½ "
17 "	5½ "
19 "	7 "

The above figures are approximately the amounts that healthy infants of varying weights draw from the breasts at each feeding. The scientific examination of these figures reveals the fact that four-fifths of the food consumed by the infant at the breast corresponds to the physical expenditure of the infant and the other one-fifth is employed in growth. This calculation is arrived at when one appreciates the following cardinal principles: (1) The combustion of food within the tissues produces heat. (2) An infant in proportion to its weight, generates three times as much heat as an adult, because its surface area is proportionately to its weight three times as great as that of an adult. (3) The quantity of heat lost must be estimated before assigning the amount of food to cover this loss. (4) A knowledge of the amount of heat produced by the combustion of food is necessary.

By experiment it has been shown that the amount of heat given off per day by an adult equals to 10 calories per pound of his body weight. An infant's loss of heat is 30 calories per pound, or three times that of an adult's, comparing them weight for weight. At this rate the average baby, weighing seven pounds at birth, will lose 210 calories. In accordance with the above stated fact that four-fifths of the food consumed is expended in energy by the infant and one-fifth is employed in growth, we must therefore supply not only the quantity of food that will when consumed yield 210 calories but an additional one-fifth for the growth which in the total represents about 250 calories.

Cow's Milk in Infant Feeding.—If cow's milk is accepted as the only practical substitute for mother's milk one can easily calculate the number of calories required for the infant's use by comparing the two fluids and giving the amount of cow's milk that will yield the necessary number of calories. In feeding by this method one should bear in mind that the infant is not a calorimeter and that its food cannot be arranged on this mathematical plan. One must also bear in mind the great factor, the digestibility of a food, and this consideration involves an accurate knowledge of the difference in the constitution between cow's milk and human milk.

Although the analysis of milk differ from each other, they agree upon the essentials, viz: that there exists nearly the same percentage of fat in both human and cow's milk; that human milk contains about two per cent. more sugar; that cow's milk contains three times as much saline constituents as human milk. There seem to exist differences in opinion as to the amount of proteid constituent. Notwithstanding these differences one fact is brought out by all observers, that the proteid content of human milk consists very largely of lactalbumin whereas the proteid in cow's milk is almost entirely casein. From this fact one assumes that we must, in artificial feeding, supply in the milk as much lactalbumin as is present in human milk. Simple dilutions of cow's milk makes the proteids in cow's milk resemble those of human milk arithmetically but not physiologically, because as the milk is diluted so the lactalbumin begins to vanish.

Lactalbumin Mixtures.—Hitherto there has been one palliative available which consists in diluting the milk with whey, which is a solution of lactalbumin, sugar and salts. The use of whey meets the difficulty only partially, because whey cannot supply Nature's proportion of lactalbumin. In addition, the domestic preparation of whey is troublesome and the product is often a decided failure. From experience, I became convinced that the addition of pure lactalbumin to the milk mixtures of hand-fed infants is an indispensible requirement in order to guarantee the success of artificial feeding. Modern research suggests that it is the abundance of lactalbumin present in human milk which makes its casein digestible and that cow's milk casein is indigestible because of the paucity of lactalbumin with which it is associated. The explanation of this circumstance follows from certain experimental investigations made on the physical state of solutions. Attention has been drawn to the condition of "colloidal solution" such as is formed by gelatin, gum or other "colloid" bodies. There are two classes of colloids with differing physical properties, known as the "reversible and irreversible" colloids. A reversible colloid is one which cannot be precipitated by acid, base or salt and when dried can be redissolved. An irreversible colloid is one that can be precipitated by acid, base or salt and when dried, does not redissolve. The importance of all this centres in the circumstance that casein is an irreversible coagulating colloid, whereas lactalbumin is a reversible or protecting colloid. Human milk thus contains an excess of protective colloid and therefore its casein forms a fine soft coagulum, in contrast to the firm bulky curd of cow's milk.

As lactalbumin is now procurable in the form of a neutral soluble substance in powder form, there is ample opportunity for its adoption in practice.

This substance, termed "albulactim," lends itself to a very ready demonstration of its effects, if a weak solution be added in a test tube to pure milk and then acidified with diluted acetic acid. The result should then be compared with the contents of a test tube of pure milk without albulactim, to which acetic acid has been added. In the former case, the precipitate obtained is soft, flocculent, and consists of minute particles in the latter case, the precipitate is the ordinary thick, firm and tough curd.

The amount of albulactim which should be added to the milk mixture in order to secure these physiological benefits, should correspond with the amount of lactalbumin present in the milk. An addition of three grains to each ounce of milk mixture is perfectly satisfactory. One may dilute the cow's milk to reduce the casein in the mixture to the percentage in which it exists in the human milk, although Professor Budin of Paris and others claim success for feeding infants on undiluted cow's milk.

The practical outcome of the foregoing remarks resolves itself into a strong claim for a routine milk mixture which consists of equal parts of milk and water, with the addition of three grains of albulactim (lactalbumin) to each ounce of the mixture and of an appropriate quantity of sugar. This mixture of equal parts of milk and water should not be given to infants for the first fortnight. They should be started with two parts of water to one of milk. The proportion may then be raised to three parts of water to two of milk, and at the end of the second month, the normal healthy infant will be quite prepared to digest equal parts of milk and of water with the appropriate addition of lactalbumin and sugar. The amount of each feeding must be regulated according to the weight of the infant.

Dr. Snowman claims to have had great success with this method of feeding and says that it is preferable to and more reliable than the use of citrate of milk, peptonized milk, cream and whey feeding and all other plans which have been adopted to meet the frailty of infantile digestion.

Caloric Method of Infant Feeding.—S. A. Blauner says that the percentage method finds its wide-spread support in the fact that it attempts to make the proportions of the three important elements of cow's milk, correspond as closely as possilbe to that of breast milk; and that it succeeds in this important phase of the problem, there can be no doubt. But, unfortunately, it has missed one other important truth of infant feeding, in that it does not consider the child's actual volume requirement; and it is this element that the caloric method tries to supply. The percentage method recognizes the importance of making cow's and breast milk as similar as possible, and insists upon its absolute necessity, in order to preserve the child's digestive powers. But, in doing so, it seems to feel that the child lives only for its digestion, and not that the digestion is only a means of supplying the child's energy value. The caloric method recognizes and adopts the value of diluted milk, and also, like the percentage method increases the carbohydrates of this diluted milk to equal that of mother's milk. The percentage of sugar of mother's milk being seven per cent., in a liter there will be 70 grams, and to increase the sugars of the diluted artificial milk to contain that amount, it will be necessary to add to the diluent of one-third milk, eight per cent.; of one-half milk, 10 per cent., and of two-thirds milk, 12 per cent., and their respective caloric value will be: One liter of one-third milk, 400 calories; liter of one-half milk, 500 calories; liter of two-thirds milk, 600 calories. This may appear rather complex, but if simplified to a system, all that is necessary to be remembered is: (1) Age of child and its weight, and the computation of its caloric need by multiplying its weight by either 80, 90, 100 calories, depending of course, on its age. (2) To remember that a liter of one-half milk with eight per cent. addition equals 400 calories; one-half milk with 10 per cent. addition equals 500 calories; two-thirds milk with 12 per cent. addition equals 600 calories, and full milk equals 650 calories. Is the administration of milk by this method any more difficult than by the percentage method? Surely not. In fact, it is a saving of both time, labor and expense to both mother and physician, and once we get into its routine, it is surely surprising how quickly we can prescribe any strength of milk for any infant, and how quickly the mother comprehends its execution. An illustrative computation is given.

Top Milk and Whey for Infant Feeding (One Quart of Milk Daily up to the End of the First Year); With Some Observations on Milk purity and Preservation.—Ransford E. Van Gieson, Brooklyn, N. Y., considers the best solution of the problem of obtaining good milk for the feeding of infants. The ingredients of cow's milk are different from those of human milk; the problem of infant feeding is one of adaption of the child's stomach to a foreign food material. Cow casein has to be modified so as to prevent the formation of large tough curds in the stomach. The author's method is to pour off the top milk so as to get the requisite amount of butter fat and to curdle the remainder with rennet so as to get whey, which contains lactalbumin. This is to be mixed with the top milk for feedings. Whey prepared by this method is a chylous fluid, opaque from the presence of fat. An important feature is the inhibition of the enzyme when the whey has been made, to prevent curdling of the milk. The author prepared the whey at the temperature of 130 degrees so as not to coagulate the lactalbumin. Sugar must be added to the mixture. Formula are given for the mixing of these ingredients. It is possible thus to feed properly an infant for the first year with one quart of milk daily. The central idea of the formula given is gradual adaption of foreign substances to weak stomachs; the great value of lactalbumin as a diluent and nourishing soluble proteid; the necessity of preserving it intact by the use of moderate temperatures; and the preservation as far as possible of the proportions of one-third lactalbumin to two-thirds proteins. This process is neither difficult nor expensive when properly done, and is easily learned by the mother.—*Medical Record*, July 15, 1911.

Feeding of Fats to Infants and the Difficulties Ecountered.—By Dr. Charles Douglas, (*Jour. Am. Med. Assoc.*, February 4, 1911). The author finds that few infants can digest milk in which the fats are as high as four per cent. In a majority of cases two per cent. is the upper limit of fat, which the average infant will digest. Newly born infants generally digest fat more perfectly during the first few weeks of their lives than they do in later months. Over-feeding of either fats, protein or sugar will very soon materially limit or entirely destroy the power to digest that food.

It is a serious mistake to increase the proportion of fat in food for its laxative effect. It is very desirable that each infant should receive the highest percentage of fat which it can digest properly, but more than this simply remains in the bowel to decompose and poison the child. There is no food the digestion of which is so quickly destroyed as fat. It requires less than one-half of one per cent. of imperfectly digested fat in an infant's dietary to prevent it from growing, to disturb its sleep, to destroy its color and to pave the wave for marasmus and other forms of malnutrition.

Imperfect digestion of fat is shown by the variable and lessened appetite of the infant, by the greasy condition of the stomach and bowels, by the disturbed sleep, by the pale yellow color of the skin, by the tendency to vomit from one-half to one hour after feeding, by the offensive odor of the stools, by their pale, greasy, rancid-butter, or dry, crumbly appearance, and by the failure of the infant to grow. Any one of these symptoms is enough evidence that the proportion of fat in the food is too high.

Infants with feeble fat-digesting power succeed better when fed rice starch than they do with any other. Barley is fairly successful. Oatmeal is not borne well by these children. In feeding albumen-water care should be taken not to include any of the yolk.

Nature designed three foods—fats, carbohydrates and protein— as necessary for growth and development. As those infants who cannot tolerate fats must subsist upon two of these foods, their progress is always slow during the first six to eight months of life.

Diseases of the Skin and Uro-Genital System

Under the Charge of

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Leprosy: An Experienced Man's View.—Dr. R. H. Bibb, President International Medical Association of Mexico, (*American Journal of Dermatology and Genito-Urinary Diseases.* August, 1911). In an interesting and elaborate article on the above subject, the author not only presents the views of many well known authorities as well as his own as to the contagiousness of leprosy. Of the conclusions he arrives at the last one seems to me of special importance and worthy of a good deal of thought. The conclusions the author arrives at are the following:

1. That leprosy is a specific disease, due to the presence of the lepra bacilli.
2. That leprosy is influenced by race, climate, food, etc., only in so far as these environments tend to enervation on the one hand, or to physical well being on the other.
3. That experiments have not demonstrated leprosy to be inoculable on man or beast.
4. That leprosy is probably hereditary in the same sense as its congener, tuberculosis.
5. That leprosy is communicable from the sick to the well under conditions not as yet understood.
6. That whilst mitigable—some cases actually recovering—leprosy must be regarded, for the present, as an incurable disease.
7 *That by proper segregation, it is probable that leprosy could eventually be eradicated from the list of human ills.*

The article should be read in the original.

Vincent's Angina.—Dr. Murray McFarlane, (*The Canadian Practitioner and Review*, June, 1911). A special and rare form of angina was first reported by Professor Vincent of Valde Grace, in 1898, which in its membranous stage is liable to be confounded with diphtheria and with syphilis in the ulcerative form, unless a bacteriological examination is made.

Vincent described as always accompanying this form of angina, a fusiform bacillus almost always accompanied by a spirillum with a spring-like movement, which is not, however, marked.

Many cases may have been treated as follicular tonsillitis or even diphtheria. The clinical appearances of Vincent's angina differ according to the stage of the disease. It is distinguished usually as representing two forms, a membranous and an ulcerative, but is is more than probable that these are but two stages of the same affection.

There is at first a grayish-white or yellow membrane, with scarlet inflamed border, with an appearance of loss of substance immediately beyond this zone, usually situated upon one tonsil or also involving the pillar.

This may extend superficially or may eat deeply into the tissues, giving rise to a punched out ulcer, honey-combed or funnel shaped. It may spread to the gums, palate or other tonsil. In some cases a peculiar foetor of the breath is observed, but this is not constant, and was absent in two of the writer's cases. The pain complained of is not nearly so severe as the clinical appearance would lead us to expect. Considerable cervical adenitis is often present, but is not suppurative. Headache, vomiting and general malaise is present in the earlier stages when the membrane is present. The temperature is striking in disproportion between what would be expected from the local disturbance, rarely going above 100 degrees. In five of Rollston's series of 32 cases the temperature was normal, in 10 between 99 and 100 and in only four was it above 102.

Energetic treatment has to be employed, but relapses are frequent. The diagnosis depends upon the discovery of the pathognomonic organism. Iodine and iodide of potash are highly recommended. (I recall a case, which I have successfully treated with methylene blue and quinine internally and nitrate of silver and permanganate of potash locally.—*E. W. D.*)

Tobacco should not be used during the disease, and oral sepsis carefully carried out, carious teeth attended and the general hygiene of the mouth looked after, as the lack of care in this respect has been given as the predisposing cause of the affection, as well as youth, the male sex, the caries of teeth, syphilis and stomatitis.

The author reports three cases of this disease, the character of which had been proved by the microscope. It should be used in every case as routine treatment.

Diagnosis of Enlargement of the Prostate.—Dr. Edmund E. King, Surgeon St. Michael's Hospital, Toronto, (*The Canadian Practitioner and Review*, June, 1911). The writer advocates the use of the cystoscope in cases of prostatic enlargement, but would like to see it limited to selected cases.

It should, however, not be used in every case as a matter of routine. Great care should be exerted in cases of enlarged prostate and the examinations should always be made under anaesthesia.

As it has a wide range of usefulness in many cases of kidney and bladder disease, it should be confined to such. It can also be used in examining the bladder through a suprapubic incision, but this should only be tried where it can give us valuable information.

Some Features of Masturbation.—Dr. Maurice Freeman, New York City, (*American Journal of Dermatology and Genito-Urinary Diseases*). We must welcome this brief and concise addition to the literature on this habit.

The author gives two direct causes: (1) Mental, and (2) Some pathological conditions of the uro-genital apparatus. It has always been a well understood fact however that environment and the perusal of lewd literature, etc., played an important part in the production of the habit. Pernicious, as the author calls it, it is only when it is presisted in and practiced exclusively. This, however, is a rare occurrence and young men, as a rule practice it only "Faute de mieux."

The symptoms which are given and which I will quote here verbally, are in my opinion such of rare and well advanced cases, in which I would suspect decided and lasting mental changes.

"The symptoms of this disease, for it brings about certain pathologic changes, we must class it as a disease are varied. Some of these pathological processes can be demonstrated, others cannot. It is not surprising that some men and women will acknowledge having masturbated for years and try as we may, we cannot point our finger to any harm having originated therefrom. However, this is the exception, not the rule. As a rule, prolonged masturbation produces certain well defined symptoms and signs which an experienced eye can readily determine. We will take a typical example. A young man, 19 years of age; he will wait in your reception room, in a very restless manner. When you first see him one thing strikes you as very characteristic, viz., the man has lost the general tone of the body. He feels depressed, has a haggard look, eyes sunken and all lustre lost. He will tell you he has had sleepless nights, usually with seminal emissions, and has lost all interest in his personal welfare. He has probably read some of the quack literature and the picture they paint of the masturbator has tended to add to his gloom.

He will require close questioning together with assurance of your interest in his case to elicit the truth. However, if one acts persistently but kindly, the truth will be forthcoming.

Physical examination will reveal on inspection all the above phenomena, together with a well defined throbbing heart and possibly carotid arteries. The tongue when protruded is, as a rule, tremulous and coated. Conjuctiva of eye pale. We find relaxed scrotum and pendulous testicles. In the female all the above may be seen. An examination of the genitals by inspection may just show slight redness of the parts.

Palpation.—Reveals the excessive beating of the heart and vessels, and through vaginal examination in the female the ovarian regions are, as a rule, tender.

Auscultation.—May reveal one or more hemic murmurs. Without a reliable history we would put the case down as one of neurasthenia, and indeed, it may be classed as one of the sexual type.

Subjective symptoms, as a rule, are confined to headaches, loss of appetite, tired feeling in the morning as though the rest at night had not been sufficient. As a rule no symptoms subjective in character and referable to the genital region are obtainable."

If we take a hopeful view of matters human and I am inclined to do so, we must admit that a picture like the one drawn is extremely rare in the waiting room of the general practitioner and occurs only occasionally in the reception room of the urologist.

The irritative moment plays a very important role and I agree with the writer fully that a careful examination of the state of the genital and uropoietic system should be made.

An enlongated prepuce, an inflamed prostate, whether cause or effect, the presence of concretions, ureteral, renal or cystic, constipation and in the female preputial adhesions and ovarian disturbances are frequently at fault. Rectal worms entering the vagina, and chronic irritation as acrid discharges and the presence of sugar in the urine may be responsible for the practice. Whatever it may be, the removal of such causes is liable to be followed with happy results and the necessity of allying the existing irritation having been removed, most patients will forget this practice so devoid of the satisfaction brought about by normal intercourse.

Salvarsan for Infants and Young Children.—Johann V. Bokay, who worked in conjunction with Ludwig Vermes and Zoltau V. Bokay, (*Wien. Klin. Woch.*, No. 17, 1911), describes the action of salvarsan in 26 cases of syphilis in infants and young children. Thirteen of the patients treated were under a year old; 23 out of the whole 26 suffered from congenital syphilis, and 10 out of the 13 babies. The youngest baby was five weeks old. All were fairly well developed and well nourished breast-fed infants. At first the initial dose was 0.005 gram per kilogram of weight, but later this was increased to 0.008 gram and to 0.01 gram per kilogram. Wechselmann's neutral suspension was found a more satisfactory preparation than the neutral or slightly alkaline solution in methyl alcohol recommended by Ehrlich, because it caused a smaller and more quickly disappearing infiltrate, and as a rule no subsequent pain. One child was treated indirectly through the mother, but with only partial success; later salvarsan was given directly to the child and the symptoms disappeared. Three injections were given in one case, two injections in each of nine others. Second injections were given when either the symptoms were slow to improve, or Wassermann's reaction remained positive. All but one of the injections were intra-muscular, none were intravenous. The injection was followed by high fever in three cases only, but in all cases fever had disappeared by the third day. The increase in weight of the infants while under observation was fairly satisfactory, especially since the weight tends to remain below the average in infants under mercuric treatment. During three months one baby put on 3,100 grams (6.8 lbs.), another 2,200 grams (4.8 lbs.), and a third 1,500 grams (3.3 lbs.) The children did not suffer from digestive disturbances as a result of salvarsan. Fourteen of the cases were under observation for more than four months, six from two to four months, and the remaining six for rather less than two months. Altogether three relapses were observed, one of them three months after a second injection, another four months after a first injection, and another ten weeks after injection in the child who had received a preliminary indirect treatment; in two of the cases relapses occurred in spite of the fact that Wassermann's reaction had become negative. The cutaneous manifestations of syphilis and those of the mucous membranes improved with wonderful rapidity under the treatment. In two cases of osteochondritis cubitorum improvement was very rapid, and in one of them after two weeks, in the other after three, the symptoms had altogether disappeared. Salvarsan was given in four cases of keratitis parenchymatosa in congenital syphilis, and the author is of opinion that it is a valuable agent in such cases. There was considerable improvement in a case still under observation of syphilitic cerebral tumor, with hydrocephalus (int. chron. minor. grad.) and already developing optic atrophy; here two injections were given and lumbar puncture performed between the first and second injection. In a case of moderate hydrocephalus internus without functional symptoms, it appeared to the author, during an observation which extended over several months, that the use of salvarsan had brought the process to a standstill, but in another of hydrocephalus with severe spastic symptoms no improvement occurred. It appeared from the cases that Wassermann's reaction might be expected to change to negative at the end of the sixth to eighth week, having become gradually less marked before that time. In spite of suggestions to the contrary, the author finds that salvarsan in doses of 0.01 gram to the kilogram of weight, given intrагluteally, is well borne by infants and harmless; it excells mercury preparations in the quickness of its action. Three undoubted relapses occurred in the series of cases, and further observations are needed as to the permanence of the cure. Full notes of the cases are given.

Comparative Birth-Rates in New York.—Birth statistics recently given out by the Health Department go to show that what the government has found to be true in Rhode Island, Ohio and Minnesota is also the case in New York City: That foreign-born mothers are almost twice as prolific as native women. In the second generation of immigrants the women are less prolific than those of the first generation. Of the 127,021 children born in New York during 1910, 64,981 were males and 62,040 females. Among the negro children the sexes were almost equally divided, 1,031 boys and 1,007 girls. In one of the typical Jewish districts of the city the birth-rate in the last three years has averaged 54.90 per 1,000 of the population of the district; in a typical Italian district it has averaged 50.47 per 1,000, and in a negro district, 26.65 per 1,000; while in a native American well-to-do residential district, comprising nine blocks, it was only 6.95 per 1,000. It is a well-established fact, however, that the death-rate is much higher in the offspring of immigrants than among the children of native parents.

Anaphylaxis.—Drs. Minet and Leclercq, who have made a special study of the condition of anaphylaxis, find that the anaphylactic toxin is very fragile and can be destroyed, or at any rate disappears from a mixture of horse serum and blood from a guinea pig immunized against horse serum by keeping it *in vitro* for six hours at the ordinary temperature of the laboratory. If the mixture is then injected into a fresh guinea pig it is not sensitized passively, that is to say, the animal is not affected by an injection of horse serum on the following day; but it is sensitized actively, that is, at the end of a fortnight an injection of horse serum produces severe symptoms of anaphylaxis. The authors conclude from this that by keeping the mixture *in vitro* for six hours the toxogenin disappears, but the substance that excites active sensitizations remains. In the same way, by keeping a mixture of guinea pig's blood immunized against diphtheria and anti-diphtheritic serum *in vitro* for six hours the anaphylactic poison is destroyed. The practical results of these findings is that if it is desired to re-inject an antigen or antitoxic serum into an animal already sensitized, as in the case of repeated injections of anti-diphtheritic serum in cases of diphtheria, in order to prevent the occurrence of anaphylactic symptoms, the animal or subject should be bled first to the amount of serum to be injected and the two mixed together in equal quantities and kept *in vitro* for six hours. If the mixture be then injected no anaphylactic symptoms should result.

BOOK REVIEWS

A System of Diet and Dietetics, edited by G. A. Southerland, M. D., F. R. C. P. Royal 8 vo., cloth 893 pages, $10.50. Oxford University Press, American branch, 35 W. 32nd Street, New York.

This work reflects the latest and best teaching of a competent corps of contributors selected by the editor, for special sections with which each contributor is a specialist in his particular field. Campbell writes on "The Evolution of Man's Diet," "Diet in Old Age," "Alcohol in Health and Disease," and "Diet in Arterio-Sclerosis." Spriggs discusses the physiology of digestion, absorption and nutrition. Dr. Edmund Cautley handles the subject of "Diet Cures and Special Diets," "Patent and Proprietary Foods," "The Invalid's Dietary," and "Diet and Obesity." Boyd gives the latest views on "Artificial Methods of Alimentation." Claude B. Kerr, an authority on infectious diseases gives the proper instructions for feeding in this class of diseases. Bardswell gives clear and explicit instructions for preparing various diets for tuberculous patients. Luff takes under consideration the proper dietary in gout, rheumatism—acute and chronic, and rheumatoid arthritis. Bradford councils the profession on the best diet in diabetes and diseases of the kidneys. Hawkins covers the subjects of diseases of the stomach and intestines and advises the best methods of feeding in these diseases. White instructs on the best methods of diet in diseases of the liver and pancreas. The editor very clearly points out the best manner of feeding patients suffering from diseases of the lungs, the feeding of infants and children in health and the proper diet in diseases of children. Hadley covers diet in diseases and disorders of the Heart. Cowan in like manner describes the best diet in diseases of the blood and blood making organs. Taylor tells his readers how to feed in diseases of the nervous system. Fox handles the subject of "Diet in Skin Diseases," and Daniels writes the last chapter, "Diet in the Diseases of Hot Climates."

Until our knowledge of the physiology of dietetics is more perfect, the scientific basis of feeding must necessarily remain more or less unstable. Yet patients must be dieted and no one can be an accomplished physician unless he has made the subject of dietetics an important part of his professional training and education. This work being the compilation of the views of a number of contributors is rendered somewhat dogmatic in tone but nevertheless it will be found to be a trustworthy guide to the general practitioner.

The editor very satisfactorily instructs the reader in the elements of physiology, the nature of foods and the normal laws of feeding, as well as the deviation by which the action of these laws is modified. The culinary art is a very important essential to provide a suitable daily menu which will be agreeable and suitable to the invalid. There is no work in the English language on dietetics more practical or more useful to physicians than this valuable book of reference on "Diet and Dietetics."

A Text-Book of Alkaloidal Therapeutics. Being a condensed resume of all available literature on the subject of the active principles added to the personal experience of the authors, by W. T. Waugh, M. D., and W. C. Abbott, M. D. Third edition. Revised and enlarged, 762 pages, cloth $5.00. Chicago. The Abbott Press. 1911.

The authors say in their preface: "The alkaloidal idea is 'in the saddle,' its phenomenal growth in the face of active opposition and without the 'weight of authority' to give it standing, is the strongest evidence of its vitality." The present volume is a worthy monument to the "active principle therapy" and an honor to Doctors Waugh and Abbott. In this revision the literature of the world has been "gone over" as it were, with a fine toothed comb in order to bring to light the smallest possible fact that seemed likely to be of value to the doctor in caring for his patient. A wealth of clinical reports has been uncovered, in French, Italian, Spanish and in other journals, to all intents, lost to all but their immediate readers; and these have been collected, compared and consolidated into compact and convenient forms for reference. The labor involved has been great, but while it was a labor of love, the pleasure of presenting this valuable material to their colleagues ought to fully compensate the authors for the "long days of labor, and the nights devoid of ease."

To the physicians who practice alkalometry, this volume will be of great value, as of course it will also be beneficial to the general practitioners.

Neither the authors nor the publishers have spared any pains in making this volume very attractive, and up-to-date in every way. It gives the reviewer much pleasure to commend this volume, as the most reliable and authorative work on alkaloidal therapy published.

A Pocket Medical Dictionary giving the pronunciation and definition of the principal words used in medicine and the collateral sciences, by George M. Gould, A. M., M. D. Author of "The Illustrated Medical Dictionary," "The Practitioner's Dictionary, and the "Student's Medical Dictionary." Sixth edition, revised and enlarged, 34,000 words. $1.00 net. Philadelphia, P. Blakiston's Son & Co., 1012 Walnut Street, 1911.

Those acquainted with former editions of this work know its value. While in no sense posing as an unabridged dictionary, it is a most valuable pocket companion. Many a word escapes us, because we haven't the means at hand to look up the meaning on the spot, while if we had one of these handy dictionaries at hand the definition could be readily found and our vocabulary correspondingly enlarged.

This little volume furnishes us with the correct spelling, pronunciation and meaning of the principal words used in medicine and the allied sciences, and also contains tables of arteries, muscles, nerves, bacteria, bacilli, micrococci, spirilli, thermometric scales and a dose table in both English and metric systems. It is remarkably accurate in terminology, accentuation and definition.

Hieronymus Fracastor's Syphilis, From the Original Latin. A translation in prose of Fracastor's immortal poem. Printed on hand-made imported paper; Library Binding. Crown Octavo. The Philmar Company, Medical Publishers, Fidelity Building, St. Louis, Mo. Price $2.00.

Hieronymus Fracastor was born in 1483 and died in 1553. He was a poet and a scholar, and it was from his poem, "Syphilis Sive Morbus Gallicus," that the word syphilis had its origin. Written four centuries ago, it affords a good clinical description of the symptoms of the disease, and the poem is a result of the author putting to verse his small prose treatise published in 1546.

There can be no doubt that Fracastor had a good grasp on his subject, for his description of the manifestations, merging into one clean-cut picture of the disease, stamp him as a master of syphilology as understood in the early part of the sixteenth century.

The literary skill of Fracastor—his style is most fascinating—is of such a high order as to have gained for him great fame, even had his work of Syphilis not put him among the few remembered writers of his period.

PEDIATRICS

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EDITORIAL

CONDENSED MILK AS A FOOD FOR INFANTS.*

Dr. L. Emmett Holt, in discussing papers read by Dr. G. R. Pisek and by Dr. S. Josephine Baker* on the milk question in connection with infantile mortality made a very wise remark when he said that "it was not only necessary to supervise carefully the diet of infants during the hot season but throughout the year. It is probable that in the cities of America there is as much, if not more artificial feeding of infants than in the urban districts of any civilized country. The working classes of the country seem to have a great predilection for canned foods of every description. Or rather it might be said that the women of this class prefer this kind of food because it entails little trouble in preparation. There is no doubt it is chiefly for this reason also that condensed milk is somewhat largely employed as a food for infants." In Great Britain this form of diet is made use of for infant feeding to a very considerable extent. The Lancet some few years ago published the results of investigations made by one of its staff with regard to the manner in which children of the poorer class were cared for. In this account it was shown that condensed milk was very largely given to infants. Recently Dr. F. J. H. Coults has published a report of investigations taken by him at the investigation of the English Local Government Board with respect to the upbringing of children. He has ascertained clearly that "machine skimmed" condensed milk is the ordinary sustenance of numerous infants and that this mode of feeding is increasing. A label is attached to the can stating that the milk is "machine skimmed" but the significance of the label is almost always misinterpreted by the mother. She generally imagines that if a milk be machine skimmed it must be pure. In addition she not infrequently takes the words on the label to mean that it is the cream and rich milk which has been skimmed off and is contained in the cans. The label is honest but misleading. As a matter of fact, the milk is really skimmed milk is the reverse of rich and provides, indeed a starvation diet. Dr. Coults recommends that the sale of condensed skimmed milk as a food for infants, be prevented. He thinks that a label should be attached plainly indicating the composition of the milk. Such milk is useful for many purposes but is decidedly not a nutritious food for infants. Perhaps, it might be advisable to label a milk of this character "Not a Fitting Substitute for a Mother's Milk."

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*At a meeting held under the auspices of the Section of Pediatrics of the New York Academy of Medicine, on Oct. 5th.

As to the value or otherwise of a full cream condensed milk for feeding infants there is a good deal of difference of opinion. Some hold that a properly diluted high quality condensed milk is a food on which infants thrive. Unfortunately, there is a sinister coincidence between the occurrence of epidemic infantile diarrhea and the employment of consensed milk. In any event skimmed condensed milk is harmful from the very fact alone that it is incapable of nourishing infants while the evidence against full cream condensed milk as a satisfactory infant food is strongly incriminatory.

True, babies may seem to thrive on this milk, that is, they may put on flesh, but if the matter be looked into closely it will invariably be found that such babies are not so healthy as they should be. The occurrence of rickets in infants is ascribed by some to overfeeding with a food that is not well assimilated. It is said to be produced by an excess of carbohydrate which overtaxes the infantile metabolism. It is not only not assimilated as it should be, but may be lacking in balance of the various constituents of the diet. In connection with this point it may be mentioned that a very interesting series of experiments have been carried on recently in order to discover the causation of beri-beri. The causation of this disease has been practically proved to be the consumption of a rice diet, which did not contain sufficient organic phosphorus. Experiments with birds have shown, that when fed on bread made from flour which was deficient in phosphorus content they failed and died. When fed on bread containing the usual amount of phosphorus they thrived. Simpson and Edie are of the opinion that a whole cycle of diseases have the same etiology as beri-beri. Among these are included infantile scurvy and rickets and they believe that the form of malnutrition described by Czerny and Kellner in artifically fed infants may be further examples.

That there is some deficiency in even the most carefully devised artifical foods for infants is obvious and it is quite as obvious that the best food for infants is milk from a healthy mother. Nowadays, however, breast feeding seems to be falling more and more into disfavor, and consequently the most efficient substitute must be sought. According to all authorities this will not be found in condensed milk of any kind and skimmed condensed milk is condemned universally as distinctly injurious.

ON THE SAFETY OF LUMBAR PUNCTURE IN CHILDREN.

Whenever a new operative procedure promises well, both as a diagnostic and therapeutic resource, and is well adopted for routine employment because of its technical simplicity, our wonder, excited at first because such a contribution to progress was not made long ago, becomes doubly great when we perceive how little headway has been made by the profession in doing justice to the innovation. The operation of lumbar puncture, devised by Quincke in 1891, has by no means become a popular procedure despite its many enthusiastic advocates. It is very evident that the technical difficulties, slight though they be, or a belief in the meddlesome and dangerous character of this form of operative interference, is held to more than offset the possible benefits which this operation might confer upon diagnosis and therapy. In revising the study of this subject to date, the fact must not be ignored that the operation of lumbar puncture has an independent relationship to the science of pediatrics. It is quite probable that in the case of adults, the technical difficulties may be considerable, the field of usefulness circumscribed, and the danger of accident great when compared with the results of pediatric practice.

Pfaundler, working in the clinic of Professor Escherich, of Graz, (where so many important contributions to pediatrics have been made), has recently completed a series of 400 lumbar punctures in children. With regard to the safety of the operation, he reports no serious accidents, while pain, hemorrhage, and danger of infection proved to be insignificant. A review of the literature assures him that other observers have likewise been satisfied with the results which they have obtained in children. Mishaps of any sort seem to be isolated and not inherent to the operation itself. Pfaundler states that owing to the superficial position of the vertebral arches in the child, together with the relatively greater spaces between them, puncture is readily effected. The lowest interspace of lumbo-sacral hiatus is the locality to be chosen for the puncture. The original puncture should always be made with the child sitting erect, in order to tap the lowest point of the column of cerebro-spinal fluid, and thereby to secure a representative drop of sediment. The serious accidents which have been reported in connection with puncture have either happened to adult patients or have been due to intentional puncture into the ventricle, which is a very different operative procedure from tapping the subarachnoid space.

CODDLING OF CHILDREN AND THE INFECTIOUSNESS OF COLDS.

The crusade now being undertaken against tuberculosis, has clearly brought to the minds of every one that the only intelligent treatment of the disease, is by means of fresh, pure air, and a good diet. In all parts of the world, sanitariums, conducted on those principles, are springing up, and even in England, where one would think that the climate was hardly suitable for the out-of-door treatment, the system is being carried out on a large scale. But, after all, it should be remembered if proper care is taken of children, when young, and if their bringing up is carried out more with the view of hardening them, and thus rendering them proof against the ubiquitous microbe, the need of sanitariums would be much less than is at present the case. It is a fact, both instructive and pertinent, that in many of the coldest portions of the globe, colds are unknown. Nansen and his men, when in the Arctic regions, although they underwent exposure of every description, never once suffered from colds, but no sooner had they set their foot on their native shore of Norway, than they, one and all, caught severe colds. The experience of other Arctic explorers is the same. It seems then, probable, that there may be something in the theory of the infectiousness of colds, and that we shall have to give up our traditional belief to the contrary, however much we may have treasured it. If the infection theory be the true one, and if it be frankly accepted, a radical change in the method of treating colds must necessarily follow. If exposure is not the direct cause, but merely acts by so lowering the vitality, that the germs can gain an easy foothold, the radical treatment must be to build up and harden the constitution in such a manner that it will refuse to harbor the seeds of disease. Mothers and nurses are too much afraid of fresh air and ventilation, but when they understood that the hot house plan of rearing children will produce a nation of weakly, delicate individuals, susceptible to every complaint that is about, they will doubtless see the error of their ways.

THE CLOSE OF ANOTHER VOLUME.

With the present issue, the last for 1911, Pediatrics completes its 23rd volume and in so doing the management takes this occasion to extend its thanks to the profession and looks back with pardonable pride upon the year that has passed. Never before in its long career has it been able to publish such a large number of original articles—contributions to medical science of which any journal might well be proud. The innovation introduced about a year ago of having Associate Editors to abstract the current Pediatric literature and arrange same in special departments has met with a great deal of favor.

For the future there is even more brilliant promise of greater success and no effort will be spared to make Pediatrics in all respects, a practical, helpful journal to every doctor who is called upon to prescribe for and alleviate the ills of infancy and childhood. During the past year a great deal of time, energy, money and gray matter has been expended on Pediatrics, striving to make it worthy of the attention of the leading Metropolitan pediatrician and the general practitioner, whether his field lies in the city or the rural districts and from the encouragement received, we have every reason to believe that we have not labored in vain.

We trust our readers have been pleased with what has been placed before them month after month and that they will continue to assist in the scientific uplift of Pediatrics. We hope that each of our satisfied subscribers will not let an occasion pass to say a good word for Pediatrics to their medical friends. Pediatrics stands wholly upon its merits and there can be little question that there are thousands of doctors who would like to subscribe if their attention was once called to its value. Such effort would be equally advantageous to all concerned for it is a self evident fact that the larger a clientele upon which a publication depends for pecuniary support, as well as for scientific contributions, the more attractive and valuable in every way it can be made. The editor desires to extend his thanks alike to the subscription and advertising patrons and to wish them, one and all, the season's compliments, a Merry Christmas and a prosperous New Year, with many returns.

CHARLES E. de M. SAJOUS, M. D., L. L. D.

Supervising Editor of the New York Medical Journal

We learn just as we are going to press, that the publishers of the New York Medical Journal have been fortunate in securing the services of Doctor Sajous as supervising editor. They as well as the readers of the Journal are to be congratulated in having a gentleman of Dr. Sajous learning and erudition as supervising editor. The publishers have chosen well and wisely—a worthy successor of the late editor—the lamented Frank P. Foster, who for decades directed the policies of the greatest medical weekly in this country.

Doctor Sajous has had a wide editorial experience, having founded in 1888 the *Annual of the Universal Medical Sciences*, which he conducted with the collaboration of some of the most eminent physicians in America and Europe, until the publication was abandoned in 1893. The *Annual* had a circulation of over 500,000 volumes and the *Cyclopedia of Practical Medicine*, founded by Doctor Sajous in 1898, to succeed the *Annual*, and intended more particularly for the general practitioner, has attained a circulation of 240,000 volumes, the seventh edition being now in course of preparation.

The value of Doctor Sajous' services to medical science has been recognized in France by his being made a member of the Legion of Honor, while in Belgium he received the order of Leopold and was made a Knight Commander of the Liberator, besides receiving other titles, both governmental and scientific. In America Doctor Sajous has been president and vice-president of many societies and is a fellow of the College of Physicians of Philadelphia, and of the American Philosophical Society. He brings to bear on the editorial problems of the New York Medical Journal a brilliant and well informed mind, wide experience, and a thorough knowledge of the needs of the American physician.

GENERAL WYMAN'S SUCCESSOR.

Of all the many proposals made for a consolidation of the various health bureaus of the Government into one bureau or department, that which has for its central idea the enlargement of the personnel and increase of the scope of the United States Public Health and Marine Hospital Service has always impressed us as the one most readily applicable to our present needs. This service, although originally designed solely for the care and treatment of sick sailors has by various acts of Congress been increasingly endowed with the exercise of public health functions, until now it forms more than a nucleus around which to build an efficient department. To disrupt it and merge it into a general plan whereby its identity would be lost would be comparable to tearing down a half-built public edifice solely to gratify the whims of political architects who would expect to reap personal benefit from the erection of an entirely new structure. And this brings us to the reflection that, of all public services, there is none in which it is so important that politics shall not be a factor as in those which relate to the conservation of the general health.

In this respect the Public Health and Marine Hospital Service has been peculiarly blessed. Akin to the medical corps of the Army and Navy in the way its ranks are recruited, the political opinions of aspirants to office have never entered as a disturbing element to influence appointments. With the death of Surgeon-General Wyman last month the Service lost the leader under which its present standards of efficiency and high reputation have been so successfully built. Up to the present writing, his place remains unfilled and although custom and precedent, and possibly written regulations, decree that the President shall appoint a Surgeon-General from the ranks of the officers already in the service, yet we believe that it is possible that political influence and newspaper notoriety of outside candidates might act in such a manner as to defeat the natural aspirations of those whom long years of routine and efficient public health work have rendered especially fitted to hold the high position left vacant by the death of General Wyman. Of these logical candidates within the ranks there are many, and if we lend our moral support to any particular one, we at the same time desire to be distinctly understood as favoring the appointment of *any one* of the regularly commissioned officers of the service who have attained the rank of surgeon in preference to any one outside the corps whom it would be possible to name. With this explanation to the medical profession at large and with our apologies to all other officers of the Public Health and Marine Hospital Service who may aspire to the position we now desire to indicate to our readers the man whom it appears to us to be most peculiarly fitted for the high office in question.

In Doctor Joseph H. White we have combined in a rare degree the greatest scientific attainments with the executive ability and tact which are so essential to the proper fulfilment of the functions of a public health officer. He entered the service in 1884, and has had experience in practically every field of its work, having been promoted in the regular order to his present rank of surgeon, and having at various times been in charge of the field operations directed against epidemics of infectious diseases. He did most excellent service as director of operations against the plague in California in 1901, and against the yellow fever in New Orleans in 1905, but perhaps his most notable work was that accomplished in connection with the outbreak of Asiatic cholera in Europe in 1893. He was stationed at Hamburg, Germany, which was the chief center of infection and it was his supervision of immigration from that port for the United States and his strenuous and successful efforts to prevent the introduction of the disease into this country that won him world-wide fame and the personal recognition of the President. The way he handled affairs in New Orleans and conquered a situation which had defied the best efforts of city and state authorities, should be sufficient evidence to guarantee that his administrative qualities are of the highest order. Besides his actual abilities, he has one other quality which is absolutely essential to the most efficient working of any campaign—that is the quality of leadership. The editor was fortunate to have once been associated in the service with Dr. White, and while working under his direction learned to appreciate his sterling qualities as physician, as an officer and as a man. He inspires enthusiasm, and all the men who have ever worked under him not only like him personally, but are immediately seized with an ambition to do great things. We predict a large and ever increasing field of usefulness for the Public Health and Marine Hospital Service and we can think of no one way in which our prophecy can be rendered more liable to immediate fulfillment, than by the appointment of Dr Joseph H. White to the position of Surgeon-General.

The Prevention of Insanity: Hygiene of the Mind.—A. J. Rosanoff, King's Park, N. Y., describes the modern viewpoint with reference to the etiology of insanity and its prevention. The essestial causes are heredity, alcoholism, syphilis, and injuries to the head. The incidental or contributing causes are all sorts of strain upon the physical and mental systems. The author gives the probabilities for the production of insanity or its avoidance in various degrees of heredity in the parents and grandparents. Both parents being normal and from normal ancestors, all children should be normal and not capable of transmitting any hereditary taint. Alcoholism is the cause of insanity in about 30 per cent. of all male admissions to insane hospitals. Syphilis causes insanity in from 10 to 35 per cent. of admissions. Head injuries cause neurasthenoid states or traumatic dementia. As to prevention, heredity may be controlled by education and by sterilization of defectives and criminals. Alcoholism may be controlled by regulation of the traffic in this commodity. The Gothenberg system seems the best as yet found. It allows societies to obtain liquor licenses with the view of discouraging the use of stimulants and organizes clubs and provides good saloons for the lower classes. Local option and no-license assist in lessening crime but not insanity. The prevention of syphilis is allied with the prevention of prostitution. Measures for this have been found far from satisfactory. Compulsory reporting of syphilis with segregation when necessary would help to prevent the spread of the disease. By the use of salvarsan the infectious period will be reduced from three or more years to as many months or weeks. Syphilitics should be advised not to marry without at least three years of thorough treatment. The wife when pregnant should be treated. Education of the neuropathic individual along preventive lines will be of value.—*Medical Record*, May 13, 1911.

Relative Increase of Negroes and Whites.—Returns from the census of 1910 in the southern states show some interesting facts relative to the racial proportions of population in that district. In the nine "cotton states," during the decade from 1890 to 1900 the increase of colored population in the cities was 23.2 per cent., and that of the whites 27.6 per cent.; in the rural districts the negroes increased 17.5 per cent. and the whites 18 per cent. During the decade from 1900 to 1910, the colored increase in the cities was 30.5 per cent. and that of the whites 46.6 per cent.; in the rural districts the negroes increased only 8.3 per cent., but the whites 17.3 per cent. The great gain of the white increase in the cities is probably largely due to economic immigration; the great decline of the negro increase in the rural districts represents partly dissemination through other states, partly an actual abatement of natural increase. Whatever the cause, the figures seem to indicate, as might be expected, that the negro is not wholly able to compete with white races for survival, especially under the strenuous conditions of modern environment.

PEDIATRICS

ORIGINAL ARTICLES

COMMON AILMENTS IN INFANCY AND THEIR TREATMENT.

BY

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A few months ago I made an analysis of the answers given me by 42 consecutive mothers who brought their infants to me at the Queens' Hospital for Children. I put the same question to each of them, namely, "What is the matter with your infant," and the following is an analysis of the replies: ten were reported to be suffering from wasting, seven from sickness, six from fits of screaming, five from constipation, five from cough, three from diarrhea, one from snuffles, one from throwing back of the head, one from bandy legs, and the remainder from heterogeneous symptoms of an equally uninteresting character.

The analysis bears out on a small scale what must be the experience of all hospital physicians, namely, that the greater part of their time is occupied in dealing with cases of the more commonplace description. So-called interesting and rare cases are extremely scarce. A fuller analysis proved that at least 80 per cent. of symptoms complained of were due to errors in feeding. It is clear, therefore, and must be by attention to the dietetic treatment that we shall be more likely to achieve success in the management of the majority of the cases presented to us for treatment.

This line of treatment is unfortunately often thought beneath the dignity of the specialist, his thoughts are so occupied in making an elaborate diagnosis and in the medical treatment, that often little time remains over for detailed instruction with regard to diet and other hygienic matters. It thus comes about that the mother's anxiety for information on these important points is relieved by the presentation of a printed paper of directions for the feeding of normal infants. The value of such papers is, at the best of times, small, but their use in the treatment of sick children is, in my opinion, to be strongly deprecated, for such children require individual treatment; they cannot be fed by rule of thumb or by arbitrary laws.

Marasmus.

Now before I begin the treatment of cases of wasting, the commonest symptom for which infants are brought for treatment, I would ask to be allowed to deal with certain general considerations. Infants may waste from general constitutional disorders, from immaturity, prematurity, or from specific infections, but the vast majority of them waste because the nature of their food or the mode of its administration is, or has been, ill adapted to the infant's requirements.

We know that no individual, whether young or old, is capable of utilizing for the purposes of nutrition many of the articles of diet which are presented in the form of food until such articles have been dealt with in a very special way by the process of digestion. We know, for instance, if foreign proteid bodies such as meat juice, white of egg, or lactalbumins are injected directly into the blood vessels, that they either prove actually toxic, or are eliminated from the system as foreign bodies by the kidneys or other excretory organs in an unchanged condition.

The only proteid bodies which can be utilized by the tissues for the purposes of nutrition are those which are of a certain specific "make-up" or present a definite molecular structure out of the nitrogenous food he eats. Each individual builds up his own specific proteids to suit his own specific needs and the delicate bio-chemical reactions of his own tissues. These specific proteids are built up out of the relatively simple fragments into which foreign proteids are broken up in the process of digestion. For instance, the vastly complicated caseinogen molecule of cow's milk is split up by the associated and connected action of gastric, pancreatic and intestinal ferments into fragmentary particles of amino-acids, or into small chains or amino-acids (polypeptides). Out of these fragments, or bricks as they are picturesquely called by Abderhalen, the synthetic activities of the mucous membrane of the intestines build up new proteids of the required molecular "make-up." What is true of proteids is also true of sugars and fats. Each foreign molecule must be reduced to relatively simple and rudimentary fragments by the process of digestion, and these fragments must be rearranged on the required architectural plan during the processes of absorption before they can be utilized by the tissues for the purposes of nutrition.

Nutrition is therefore clearly dependent not only on the satisfactory disruption of food elements into their more elementary fragments, but also on the satisfactory rearrangement of these fragments during the processes of absorption. Nutrition cannot be furthered by forcing foreign food into the system; indeed, nothing short of the transfusion of the mother's blood, which presumably is of the required "make-up" into the infant would be of the least value from the point of view of nutrition prior to the establishment of its motor and digestive functions.

The new born infant is not provided with the necessary machinery for shattering molecules of foreign food; it has to acquire the art by its own experiences. Further, it must first learn how to propel food from the stomach into the duodenum and onwards through the entire length of the intestines. This essential and preliminary stage is often so badly learned by artificially fed infants that the major proportion of all ingested food is vomited through the cardiac orifice of the stomach instead of being discharged through the pylorus into the duodenum.

Nature will, as a rule, provide the necessary experiences, but, alas, too often human ingenuity outwits her efforts and seeks to substitute short cuts for the more circuitous but safer routes.

I do not propose to delay the practical consideration of treatment by enlarging on the fascinating subject of the manner in which nature teaches the new born infant to digest human milk by means of an introductory apprenticeship in the digestion of colostrum.

To learn to digest cow's milk cannot be an easy task at any time. Some of us never learn to do so satisfactorily; it seems to me, therefore, to be merely courting disaster to present the new born infant with a variety of food which so stubbornly resists cleavage into its component fragments.

It will not, therefore, surprise you to learn that six out of the ten cases of marasmus to which I have already referred were given cow's milk before they were many days old, or before they had learnt the simple lesson of digesting their own mother's milk.

The several processes of the locomotion of food through the digestive tract, of its fragmentation into elementary particles of its reconstitution on specific lines, and its final break-down by the internal metabolism of the tissues, are so intimately associated and mutually inter-dependent that weakness in any one link in the chain is reflected throughout the entire series of events, and may lead to the same general results, namely, marasmus or wasting.

It is therefore clearly the first step in the national treatment of wasting conditions to determine as accurately as possible, by a review of the past history or present condition, the precise link in the chain of processes which has broken down and is giving rise to the trouble.

It would prove too tedious to enumerate all the possible weaknesses or combinations of weaknesses which a critical examination to a large number of cases of wasting can disclose, but apart from a certain number of instances in which symptoms of vomiting, diarrhea or convulsions dominate the scene, the great majority of cases are due to a more or less common cause, and, as far as my experience serves me, these cases can be cured with a reasonable degree of certainty, by the application of a comparatively simple method of treatment.

The type of case to which I refer conforms more or less accurately to the following description:

The infant frequently, but not always, vomits after feeding; the stools are too frequent, sometimes after feeding, sometimes are irregular intervals, they nearly always contain so-called undigested curds. The stools have a foul odor, and the buttocks are usually red and excoriated. The infant cries a great deal, is restless, sleeps badly, and continuously loses weight. On careful inquiry some such history as the following will be elicited:

During the first or second day of life the midwife has administered a dose of castor oil which has swept the bowel clear of all meconium. This dose is necessarily followed by a period of constipation, for no material is left in the bowel to constitute a natural action, nor does the limited supply of colostrum afforded by the breast during the succeeding days in any way afford an adequate basis for a motion. The colon is relatively dry and empty, while with each wave of peristalsis its unlubricated surfaces ride over one another with a considerable degree of friction, giving rise to dysperistalsis, tormina, or even enter-spasms. If under such circumstances an action follows, or if a second dose of castor oil has been administered in the hope of affording relief, the motion will be found to contain a number of small white bodies which are almost invariably regarded as undigested curds. If, however, these little particles be washed out in water and carefully examined, they will be found to be not undigested curd, but little strands or pieces of mucus or mucous membrane, which has been forcibly torn off the surface of the bowel and rolled up into little balls by the irregular and violent peristalic condition of the colon. If these little balls of intestinal secretion are fresh they present the appearance of raw white of egg, but if they have remained in the bowel for some hours they become opaque and then look like hard-boiled white of egg, or undigested curd. In nearly every stool many forms are met with, from stringy pieces of glairy mucus, to those little hard balls of opaque material which certainly have a most deceptive similarity to broken-up undigested coagula or casein. Even to the naked eye their true charcter is easily revealed if they are freely teased out in a bowl of water. On many occasions I have found small punctate traces of blood on the surface which was once attached —evidence of their origin, the force with which they have been torn off the surface of the bowel.

The abrasions or breaches of continuity which are thus caused in the delicate epithelial lining of the colon is to my mind an adequate explanation of the many troubles which follow. They explain the habit of dysperistalsis which is so presistent in such cases even under the most careful methods of treatment. They explain the extreme liability of intestinal infections, and they explain the easy decomposition and fermentation of food in the lower segments of the gut. A smooth, intact and healthy condition of the epithelial lining of the colon is essential for the normal locomotion and absorption of food in this portion of the bowel. A damaged intestine encourages bacterial growth and bacterial invasion of the tissues. Matters are naturally made considerably worse if at this time cow's milk is substituted for the breast milk, which is supposed to be disagreeing or to be inadequate in amount.

It is quite impossible to exaggerate the importance of the part which meconium plays in the early protection of the bowel-wall from rough usage. It acts as a perfect lubricating medium and also as a most happily designated material for constituting soft non-irritating motions until such time as the breasts are secreting freely and the infant is receiving sufficient nutriment to provide the basis for a normal stool. In seven out of the ten cases of wasting recorded above, I discovered that *this fatal dose of castor oil* has been administered before the infant was forty-eight hours old.

The subsequent history of infants who present these early symptoms can easily be predicted. Breast-milk is said to disagree or to be insufficient in amount, and the infant is tried first with one kind of food and then another, always, however, with the same result.

The whole digestive mechanism has been thoroughly dislocated from the first, and no kind of food can agree; the surface of the colon is roughened and inefficient both in its locomotory and absorbent functions. The infant is never free from tormina (generally called wind) unless its intestinal tract is kept freely lubricated by aperients or by an active secretion of mucus.

The treatment of these cases is complicated by the fact that the wasting condition of the infant invites a liberal supply of food, but under such circumstances very little food can be absorbed, and that which is not absorbed is decomposed or undergoes fermentation and hence adds greatly to the trouble. Further the infant's nervous system is worn and racked by the constant pain of dysperistalsis and by the toxins that are absorbed owing to the unhealthy condition of the bowel.

The indications for treatment are to give small quantities of food which can be easily digested and absorbed, and also some indifferent material which will not decompose, which will form the basis of a motion, and which will lubricate and soothe the irritable mucous membrane of the colon and small intestine. For hospital cases, I find the following methods of fulfilling these desiderata eminently satisfactory. I give, for an infant eight to twelve weeks old, one teaspoonful of condensed milk in two to three tablespoonfuls of water every three hours; in each feeding I give one to two teaspoonfuls of petroleum emulsion. If there is diarrhea I give glycerine of bismuth combined with this emulsion, and in doses from fifteen to thirty drops according to the severity of the symptoms. If there is vomiting, the bismuth and petroleum are given about five minutes before feeding. If there is flatulence I give varying doses of milk of magnesia or carbonate of soda, and if the powers of digestion are feeble I also give elixir of papain or liquor pancreaticus.

At the earliest opportunity I increase the amount of the feedings, and finally I begin to substitute cow's milk for the condensed milk by very carefully graduated increments, generally ten drops at a time. By this means I re-educate the infant in its digestive and motor functions, as I have already stated, the results, if slow, are in the end highly satisfactory. Confidence, patience, and consistency are absolutely necessary, for if the infant does not make the progress which the mother seems to expect we may be tempted to make experiments and try short cuts, which in the end prove no more satisfactory than the haphazard methods which were tried before, and which failed to give relief.

Vomiting.

After wasting, vomiting was the more common symptom in my group of cases. Of the forty-two cases above mentioned seven were brought because of this symptom, and one in six is, I believe, about the average frequency of this symptom among the hospital cases (infants).

Vomiting may occur as a symptom quite independently of gastric disturbance in association with intestinal, nervous or constitutional trouble. On this occasion I propose to deal only with vomiting of gastric origin. From the point of view of treatment I find it convenient to classify the varieties of vomiting in relationship to the time interval after feeding at which they occur. The first question I always ask is, "How soon after feeding does the vomiting take place?"

The varieties may be classified as follows:

(1) Vomiting which occurs immediately after feeding.

(2) Vomiting which occurs from ten to thirty minutes after feeding.

(3) Vomiting which occurs more than thirty minutes after feeding. Dealing with these three classes independently we find that vomiting immediately after feeding may be due to—(*a*) simple over-filling of the stomach; (*b*) Eructation of gas; (*c*) Violent movements of the stomach induced by, (*i*) the irritating or stimulating character of the food; (*ii*) the irritable condition of the mucous membrane or nervous mechanism; (*iii*) Shaking or jolting the infant.

Vomiting which occurs from ten to thirty minutes after feeding may be due to (1) the coagulation of caseinogen and the presence of a solid clot in the stomach; (2) the presence of an excess of acid in the stomach.

Vomiting which occurs more than half an hour after feeding is generally due to dilatation of the stomach, or to spasm or obstruction of the pyloric orifice.

Apart from the time interval which intervenes between feeding and vomiting, the character of the vomit affords useful diagnostic information. It should be noticed whether the food is returned unchanged, clotted, or with a strongly sour odor, or, as indeed often happens, whether the vomit consists simply of fluid which has the appearance of clear water.

The treatment depends naturally on the cause.

If the vomiting occurs immediately after feeding, if the food is returned unchanged, and the act occurs without effort or distress, it is nearly always due to over-filling of the stomach, and can be prevented by reducing the quantity of food.

If the vomiting occurs a few minutes after feeding, and is accompanied with a noisy eructation of gas, it can often be prevented by holding the infant in the upright position until the gas has been belched up. This expedient is so simple that it is seldom tried, and yet in many cases its efficacy is immediate and permanent. At the same time precautions should be taken to prevent the infant swallowing air, by adjusting the valve of the bottle, by enlarging the hole in the nipple, or, in breast feeding, by holding the nursling in a more convenient position at the breast.

Vomiting occurring soon after feeding, and accompanied by violent movements of the stomach, which can generally be recognized by waves of contraction passing across the abdomen, can, as a rule, be prevented by heroic doses of bismuth. I was led to adopt this method after noticing the fact that the habitual vomiters of this character never vomited after the administration of a "bismuth feed" given for X-ray examination.

Two teaspoonfuls of glycerine of bismuth (glycerini bismuthi carbonatis) combined with half a teaspoonful of milk of magnesia, ten minims of tincture of orange and one tablespoonful of water makes a most elegant mixture for an infant. If given about ten minutes before a feeding it quiets the stomach down, and the food will seldom be rejected. As a rule it will not be found necessary to repeat the dose often, but even when it is found requisite to give a considerable number of doses, I have never noticed any undesirable consequences. The magnesia tends to correct any resulting constipation.

Vomiting which occurs from ten to thirty minutes after feeding, especially when the vomit contains solid curds, can generally be prevented by giving a few grains of citrate of soda, either at the time of feeding or shortly afterwards. The citrate should be given freely at first, say five gr. to the ounce of milk, and then gradually reduced in quantity. I do not think it advisable to give large doses of this salt, as obstinate constipation may ultimately result over a prolonged period. If the vomit is strongly acid m. xv-xxx of milk of magnesia, an most invaluable corrective. It is best to give this anti-acid just before the usual time of vomiting. If the activity of the gastric juices is feeble, elixir of papain in m.x doses generally corrects the trouble.

That comparatively common form of vomiting which consists in the return of a large quantity of clear fluid generally about half an hour after feeding is, in my experience, better treated by giving undiluted milk with citrate of soda than by any other means. The reduction in volume involved in the giving of undiluted instead of diluted milk has, I doubt not, a beneficial influence, but I believe also that such vomiting occurs chiefly among infants who have active peptic digestions, and the administration of a food which occupies the energies of digestion and gives the stomach some work to do has a certain basis of rationalism. At any rate from practical experience I am convinced that good results follow this kind of treatment.

The treatment of cases of vomiting occurring more than half an hour after feeding generally resolves itself into the treatment of a dilated stomach. Washing out the viscus is naturally the rational method of meeting the difficulty, but this is not always easy in out-patient practice. Lengthening the periods between feeding, the giving of the food in more concentrated form, and in the administration of alkalies just before the vomiting usually occurs, are the best means of combating the difficulties.

Before I leave the subject of vomiting, I would like strongly to impress upon you the great importance of long intervals between feeding both as a prophylactic and as a curative measure. I have come to the conclusion that two-hourly feedings cannot be defended on physiological grounds either for young infants or for sick infants. All the best authorities on the continent recommend much longer intervals, and personally I have found that infants are more likely to thrive when they are fed every three, three and a half, or four hours than when the intervals are shorter.

One of the most difficult forms of vomiting to treat is that which is dependent upon habit, and this variety of sickness may occur at any period after feeding. A habit of this kind is very easily acquired, and it persists long after the cause which has provoked it has been removed.

I have found that an exceedingly useful method of treating this kind of vomiting is to exhaust the vomiting centre just before feeding time by the administration of an emetic. I generally give—

℞	Vini ipecacuanahae	ʒj
	Ammonii carbonatis	gr. ij
	Aquam ad	℥ss

If this dose does not cause emesis, I order it to be repeated. This violent stimulation of the vomiting centre is followed by a period of quiescence or exhaustion, and, as a rule, the succeeding meal is not returned by way of the mouth. I have cured a large number of habitual vomiters by this method. Sometimes a single dose fulfils its object, sometimes the dose has to be given on two or three successive days. I rarely get a complete failure. The difficulty in applying this method is the difficulty of making a positive diagnosis of the nature of the vomiting.

Continuous Crying.

Continuous crying or screaming seems at first sight a somewhat trivial symptom, but it is by no means trivial to the parent who has to live in the same room with the source of the disturbance. The late Dr. Cheadle used to say there were only two causes of continuous crying: First, the cutting of the eye teeth, the second, earache. When an infant is brought to me for this symptom I always think of those two most probable causes, and "pace" those who do not believe in the troubles of dentition, I have found teething most often the right diagnosis. Earache is exceedingly common in infants. When there is slight pharyngeal cough, when glands can be felt in the neck, and when the infant rolls its head from side to side and pulls at its ear, even without confirmation of the diagnosis by direct inspection of the membrane tympani—which is not altogether easy in young infants—I consider it quite justifiable to instil some opium into the external auditory member. I employ the following formula:

℞	Tincture opii	M x
	Acidi carbolici	gr. x
	Glycerinum ad	℥j

Intermittent fits of screaming are far more common than continuous crying, and they are, as a rule, associated with disturbances of the motor mechanism of the digestive tract. Wind in the stomach that cannot be expelled, pyloric spasm, hour-glass contraction and the tormina of mucous colitis are the most common causes in my experience.

Of the six infants included in the above list, four were suffering from dysperistalsis due to mucous colitis, one from earache, and one from laryngitis.

The treatment of the tormina of dysperistalsis has already been referred to; it is most successfully treated by free doses of the mixture I already described, namely, milk of magnesia, glycerine of bismuth and petroleum emulsion. If neceasary, a small quantity of tincture of opium of compound tincture of cardamons may be added to the first dose, and afterwards omitted. The petroleum alone, or the petroleum with the bismuth, may be continued as a prophylactic measure for some days.

Laryngitis is by no means an uncommon cause of crying in infants. It may be recognized by the hoarse character of the cry and the evidently painful cough. It is rapidly relieved by hot fomentations to the throat and by expectorants.

There is a wide-spread belief that thirst is a common cause of crying. I cannot say that it has been my experience to find that water is a panacae for many cases of crying.

Volumes might be written on the subject of the psychology of crying. There can be no doubt that crying very easily becomes a habit, and some infants show the greatest regularity in this respect; at the same moment day after day they will wake up and commence crying. How the suggestion arises it is not easy to say. It is quite certain, however, that the personality of certain women has a most baneful influence over certain infants, while other women have an equal potent influence in soothing these conditions of irritability. It is quite astonishing how very quick infants are to learn when crying pays them. When they know their mothers are weak enough to pick up and nurse them if they cry long enough, they will scream for hours until the unwilling resistance is overcome.

Troublesome Coughs.

Immeasurably the commonest cause of cough, at least as far as infants in London are concerned, is the pharyngeal cough. Very slight irritation or congestion of the naso-pharynx will give rise to this reflex symptom. The reflex once acquired is very apt to persist and become troublesome. It is the precursor of adenoid vegetations; Eustachian catarrh, and running ears. I have on record quite a hundred cases of infants who have developed successively the pharyngeal cough, then a small chain of glands in the neck, then earache, and finally otorrhea. Owing to my unhappy experience of this sequence of events among my babies in Marylebone, I have paid considerable attention to such prophylactic measures as come within the range of practical therapeutics.

Early operation is undoubtedly the best practice, but there are obvious objections to this drastic proceeding. On the other hand, regular and persistent irrigation of the pharynx through the nose is free from objection, and on the whole gives very good results. We supply the infants with a cheap nasal syringe and an antiseptic solution of the following formula:

Lotio thymolis:

℞ Acid. boraci	℥ij
Acid. benzoic	ʒj
Thymolis	ʒj
Eucalyptol	ʒss
Glycerini	℥viij
Spirit. rect.	℥ij
Liqor. coccl	ʒij
Aquam ad.	℥lxxx

The mothers must, of course, be instructed how to use the syringe, and this office is efficiently undertaken by one of our lady health visitors.

An occasional painting of the tonsils and pharynx with a solution of nitrate of silver (10 gr. to the ounce) decidedly expedites the cure.

The frequency of this septic condition of the pharynx among edentulous infants suggests, if indeed there is any mutual relationship that adenoids and tonsils are more likely to be responsible for carious teeth than that carious teeth are the precursors of septic inflammation of the naso-pharynx.

The next commonest cause of cough is bronchial catarrh; indeed, among hospital patients this variety of cough is even more common than the foregoing for infants with merely a pharyngeal cough are not, as a rule, considered ill enough to be brought to hospital. Both bronchial catarrh and tracheitis, especially the latter, are troublesome, for the reason that the infant seldom coughs with sufficient force to expel the mucus. And for this purpose there is nothing more valuable than the administration of an emetic consisting of vinum ipecacuanhae and carbonate of ammonium.

In hospital practice the treatment of cough is very perfunctory. The stock cough mixture is given indifferently whether the stage be that of congestion of or free secretion or of muco-purulent discharge.

Both at the Queen's Hospital and at the St Marylebone General Dispensary I employ three stock mixtures adapted to the pathological indications of the three successive stages above mentioned. The formulae of these three mixtures are as follows:

Mistura Tussis Infantilis.

No. 1.

℞	Potassii Citratis	gr. iij
	Ammonii iodidi	gr. j
	Vin. ipecac.	M ij
	Tincturae camphorae compositae	M iij
	Syrupi aurantii	Mx
	Aquam ad.	ʒj

No. 2.

℞	Ammonii carbonatis	Mj
	Oxymellis scillae	Mv
	Vini ipecacuanhae	Mij
	Syrup tolutani	Mvi
	Aquam ad.	ʒj

No. 3

℞	Ammonii carbonatis	gr. l
	Terebeni	Mi j

Syrup tolutani	M v
Pulveris acaciae	gr. ii
Aquam ad.	ʒj

The other causes of cough, such as enlarged bronchial glands, pneumonia, tuberculous disease of the lungs and the reflex cough of stomach or ear origin do not require detailed mention. With respect to whooping-cough it should be remembered that young infants very often do not whoop at all, and consequently the diagnosis may easily be missed, unless special inquiry is made as to the spasmodic nature and the intermittance of the attacks. It is useful to remember that with the development of whooping cough in infants the intervals between the paroxysms become longer as the actual attacks become more violent, whereas, with ordinary bronchitis the intervals become shorter and the actual attacks of coughing longer though not more violent.

The formula for the mixture I employ in whooping-cough is as follows:

℞	Potassii Nitratis	gr. j
	Ammonii bromidi	gr. ij
	Ammonii iodidi	gr. j
	Ammonii carbonatis	gr. $\frac{1}{2}$
	Tinctura belladonnae	M ij
	Vini ipecacuanhae	M j
	Aquam chloroformi ad.	ʒj

As the case progresses I freely increase the doses of belladonna and ammonium bromidi to three of four.

Gastro-Enteritis.

The number of cases of diarrhea which occurred in my series of forty-two infants was small (*i. e.*, three only) owing to the season of the year, doubtless in summer the proportion would have been far higher.

For the purposes of treatment the varieties of diarrhea may be conveniently classified as follows:

(1) Acute cases of summer diarrhea.

(2) The diarrhea which accompanies mucous colitis or enteritis.

(3) Lienteric diarrhea.

Summer diarrhea with acute symptoms of collapse or exhaustion must be drastically deal with.

All food should be suspended for twenty-four hours at least, the colon should be thoroughly washed out with cylsters of hot water injected at a low pressure by means of soft rubber catheter. Either a douche-can or a glass funnel may be employed. The temperature of the water should be at least 100 F. and the quantity should be not less than one pint. In my opinion this proceeding has advantages over the subcutaneous injection of normal saline, since it serves the double of washing out the bowel and of supplying the tissues with much-needed fluid. Parenthetically I may remark that the much vaunted sea water cure confers no benefit beyond that of ordinary normal saline injections.

If vomiting is not a prominent symptom small quantities of brandy and opium may be given by the mouth. Fifteen minims of brandy and half to one minim of the tincture of opium in a tablespoonful of hot water will usually help to relieve the symptoms of collapse. In those cases in which the feet are particularly cold ten minims of sweet spirits of nitre will be found to be useful in mitigating the vaso-motor spasm. The popular plan of giving arrowroot gruel is highly irrational, and personally I have little faith in egg-water. It is far better, after the bowel has been completely cleared out, to leave it in absolute rest and thus give it an opportunity to recover.

The subacute or chronic diarrhea of muccous colitis, or enteritis, does not demand such drastic treatment. If the symptoms are severe it is advisable to give egg-water exclusively for twenty-four hours or longer, but in the majority of the milder cases it is unnecessary to suspend breast feeding, or to alter the bottle feeds provided these are otherwise of a suitable character.

In the treatment of mucous colitis or enteritis there are few drugs of equal value with castor oil. This oil may be administered in small and frequent doses in the form of an emulsion, or better, I believe, in a single and comparatively large dose, once in the twenty-four hours. I usually order one-half of one drachm every night until the diarrhea is better. If, as is often the case, the infant suffers from tormina and cries much, I give large doses of glycerine and bismuth, either alone or combined with opium and prepared chalk. There is no preparation of bismuth that so commends itself to me for infants as the glycerine of carbonate of bismuth. Bismuth is not an easy drug to adminster to infants as all nurses know, in most of its forms it is gritty and remains in the mouth. Moreover, it is often rejected altogether, whereas the glycerine preparation, especially if combined with a little saccharin and cinnamon water, is very well liked by babies, and can be taken in large doses.

The following is a formula which I often employ:

℞ Glycerini bismuthi carbonatis	ʒss
Elixi glusidi	Mss
Aquam cinnamoni ad.	ʒij

Many will think this a large dose of bismuth to give a young infant, but the best effects of bismuth are only obtained in this way.

Cases of lienteric diarrhea call for treatment on the lines of re-educating the digestive processes. Very often the total inefficiency of the digestive processes is accompanied by mucous colitis or enteritis, and if so, these conditions must be treated in the manner already described. Since the digestive processes are in abeyance, all food, for a time, must be given in a completely predigested condition. The most convenient form of giving predigested food to hospital patients is to supply them with Fairchild's peptogenic powders and instruct the mothers to digest the milk for forty minutes before giving it to the infant. For an infant three months old I order three ounces of predigested whole milk every three hours—a combination of 3's which makes the method easy to carry out and also to remember.

As the condition improves the milk can be digested less and less every day, say, for two minutes less, until the infant's reinstated powers of digestion enable it to deal with plain untreated milk.

In severe cases of lienteric diarrhea a tonic treatment with hypophosphites, sanatogen, or even with small doses of arsenic may accelerate the cure.

63 Harley St., W.

Stuttering and Its Treatment.—N. J. Poock Van Baggen, The Hague, Holland, gives a short account of the etiology and pathology of stuttering and of her method of treatment. The cause of this defect is a motor convulsion or spasmodic contraction of the muscles of speech due to a disturbance of the nerves which preside over speech, the hypoglassol, facial and trigeminal. This spasm appears more frequently when the breath consonants are formed. The treatment begins with forbidding the patient to speak for several days in order to give him rest, while he takes exercises for the speech muscles. These exercises develop the control of the muscles of breathing, articulation, and voice production. After this he speaks only to his teacher until he can speak fluently, and later begins to talk to his friends and relatives.—*Medical Record*, September 2, 1911.

THE SANITARY CONTROL OF NEW YORK'S MILK SUPPLY*.

BY
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It is unnecessary to preface this paper with a discussion of the importance to the public health of thoroughgoing governmental control of the sanitary quality of the milk consumed in large cities. It is widely realized today that this is one of the foremost problems of sanitary science, a problem which has increased in difficulty and complexity in direct relation to the growth of modern urban communities and to the expansion of our knowledge of bacteriology and preventive medicine. The simple propositions at the bottom of the municipal milk problem are familiar to all sanitarians. We know that cow's milk, containing all the elements of nutrition, is an ideal food if consumed in a clean state, and while not a perfect substitute for mother's milk, is the best that we know, if there must be a substitute. But milk is unfortunately a most excellent medium for the growth of all kinds of bacteria. In fact the rise of the milk problem to its present dominating position among the tasks and responsibility of municipal health officers is only one of the corollaries of the discovery and wide-spread application of the principles of bacteriology.

The general outlines of the methods adopted by boards of health and other governmental authorities in controlling the sanitary quality of the milk supply of a large city, are also fairly well defined and generally accepted. It is recognized that a system of inspection of dairies where the milk is actually produced supplemented by inspection of creameries and of the methods of shipment and handling, all the way from the farmer to the consumer, are necessary elements in this public control. This inspection must provide for the detection of contagious diseases among those handling the milk, as well as the improvement of sanitary conditions. Whether these details are carried out under the supervision of municipal or state authorities, is a matter of expediency largely governed by local conditions. Theoretically it is better that the state authorities should exercise a uniform control over the production and sale of milk in all communities. In practice, some of the large cities, notably New

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York, have found it necessary, in the absence of thoroughgoing control by the state authorities, to develop their own system of country milk inspection. This is done in New York by requiring permits from the Board of Health for the sale of milk sold in the city and making free access to farms for inspection a condition of granting the permit. New York now maintains a large force of inspectors who periodically investigate conditions at the farms located in the seven different states from which milk is shipped to the metropolis.

The control of the conditions under which milk is handled and sold within the city, is a still more usual function of the local authorities and includes the regular inspection of stores and wagons, with frequent chemical and bacteriological tests, and the usual methods of enforcing sanitary requirements by resort to the courts if necessary.

I have thus briefly outlined what may be termed the orthodox methods of insuring the safety of a municipal milk supply in order the more clearly and emphatically to state my belief that these methods are inadequate to the purpose. My object in this paper will be to show why this is so and what is to be done about it. I shall begin by stating my conclusions.

This subject has been considered with extraordinary care and with unusual facilities for investigation, by my associates in the Department of Health, and we have reached the point in New York where we firmly believe and have officially proclaimed to the public, that the only way absolutely to guarantee the safety of the city's general milk supply is to require pasteurization, under official control, of all except certain special grades of high-priced milk. We have, therefore, in the exercise of the complete jurisdiction, both legislative and executive, which the law gives to the Board of Health in matters affecting the health of the city, adopted a sanitary ordinance, requiring that after January 1st, 1912, all milk except certified milk and certain other special grades must be pasteurized under the rules and regulations of the department. To insure a more scientific application of our system of inspection, we have also adopted a plan for the official grading of all the city's milk in three classes:

Grade A.	Milk suitable for infant feeding.
Grade B.	Milk suitable for adults to drink.
Grade C.	Milk for cooking and manufacturing purposes.

The two features, pasteurization and the grading of the milk supply, are closely related in our new milk program, which I believe constitute the most important advance recently made by any city in the direction of a better supervision of its milk supply. It will be helpful to discuss each of these two elements separately.

I. Necessity of Pasteurization.

Strongly as I have come to believe in pasteurization as a general principle, it is of course true that its necessity varies with local conditions and is particularly called for in great cities because of the enormous extension of the area from which the milk supply is drawn, and the consequent lengthening of the period which must elapse from the time the milk is produced until it is placed before the consumer. A brief consideration of the magnitude of the problem in New York, and the manner in which attempts at an adequate solution have lead to the present conclusion will indicate certain principles of general application under similar conditions.

The present system of surveillance of New York City's milk supply is, without doubt, more comprehensive and well developed than that of any other great city in the world. Since its beginning, about twenty-five years ago, it has been gradually developed and perfected in accordance with the increase of scientific knowledge and the extension of the facilities at the command of the department.

In a general way, the department undertakes the supervision of the health of persons handling milk, so far as infectious diseases are concerned, on 44,000 farms situated in seven states, which ship milk to New York, as well as in 1,100 creameries in the country, in numerous receiving and bottling stations in the city, and in 12,000 stores in Greater New York where milk and cream are sold. The department also exercises a supervision over the sanitary conditions all along the line from the farm to the consumer and makes regular chemical and bacteriological examinations of the milk. In the early days attention was paid only to the physical conditions of watering and skimming. Later the chemical content of milk was standardized and the requirements enforced in this respect. With the development of bacteriology it gradually came to be understood that the bacteria content of milk at the farm was an accurate scientific index of its cleanliness. Experimental studies in which the Research Laboratories of the Department of Health played a leading part showed conclusively that the number of bacteria in milk decreased in direct proportion to the care exercised in keeping the barn and cows clean and the milk properly cooled. As a result of this development, the system of milk inspection was greatly extended, until in 1906 inspection of dairies was begun with five country inspectors. This number has since been increased to thirty-three and, as a result of the work of the department, there has been a great improvement in the methods employed in the care of cows and in the collection and handling of milk on the farms where the city's milk is produced. Consequently, the average cleanliness of the milk supply has, without doubt, been considerably improved and the value of this work, not only on account of its additional safeguards to the health of the city, but because of its contribution to the slow process of education and raising the general standard of milk production throughout the country, cannot be doubted.

This system of surveillance has materially lessened the danger of infection of milk through the presence of cases of infectious diseases, such as scarlet fever, typhoid fever and diphtheria among the employees on the farms and in the creameries. Within the last two years, however, the progress of preventive medicine and the very development of the closer supervision of the milk supply which has just been outlined, have brought to light certain hitherto unknown facts which point unmistakably to the conclusion that no matter how complete or well organized the system of dairy inspection, it will not be possible to render entirely safe the ordinary commercial milk which is produced and shipped to a city from so large a territory as is comprised in the New York milk shed. It was as a result of careful studies of certain typhoid fever outbreaks, which were suspected to have been caused by milk infection, that several distinct, though circumscribed epidemics of this disease were directly traceable to infected milk. The studies themselves were made possible by the development of the present system of country inspection. With the careful comparison and analysis of all possible sources of infection, when an unusual number of cases occurred in one locality in the city, it was found possible to lay the blame upon the milk supplied by a particular dealer and then to follow back the trail of this milk to its sources in the country and thus finally to locate, with all reasonable certainty, the actual origin of the infection. The striking feature of these outbreaks, was that they were not found to have originated from cases of active typhoid fever or any other cases of recent development, but were shown to have been due to the infection of the milk through chronic typhoid bacillus carriers, who had suffered from the disease years before and who, at the time, were perfectly well and could not ordinarily have been considered a source of danger. The investigation had eliminated all other possible sources of typhoid fever contagion and fastened the suspicion upon these individuals. Bacteriological examinations which were then made showed that the intestinal discharges of these persons contained large numbers of typhoid bacilli and that the milk supply, contaminated from this source, was almost certainly the cause of the outbreak. In one instance it was shown that an extensive outbreak was the result, in all probability, of such infection of milk by a typhoid carrier who had suffered from the disease forty-six years ago and who had, during all the intervening years, doubtless been a continuous distributor of the disease. No such important outbreak, to our knowledge, has been previously studied and described by municipal health authorities.

The bearing of these investigations upon the theory and practice of the control of the municipal milk supply must be considered as revolutionizing. They show conclusively that no ordinary method of sanitary supervision can exclude infection by disease carriers. In the light of our knowledge of the transmission of disease in this manner, efficient surveillance would require the bacteriological examination of the intestinal discharges of all persons engaged in the milk traffic. This is manifestly impossible. In the case of New York City it would mean the repeated examination of specimens from probably not less than 300,000 persons and would include a systematic examination of every new individual who should become attached to the business of producing and handling milk.

These are the conditions. In my opinion and that of my associates, the only way in which the sanitary authorities can meet them is by requiring pasteurization at least of all milk which is not of special exempted grades. Milk which is intended only for cooking or baking should be pasteurized to avoid the danger of this class of milk being misused.

On March 23rd, 1910, Dr. Hermann M. Biggs, General Medical Officer of the Department of Health, whose standing I do not need to dwell upon before this association, submitted to the Board of Health a convincing presentation of the foregoing facts. The board thereupon adopted a resolution, advising that all milk used for drinking purposes be either properly pasteurized or boiled unless it be of the grades technically known as certified, guaranteed or inspected milk. By way of bringing this advice home to the people of the city, the department caused notices to be posted in all places where milk was sold, recommending the use of certified, guaranteed or bottled pasteurized milk for infant feeding and the boiling or home pasteurizing of any other bottled milk or milk from cans. After this policy of warning had been continued nearly a year, the Board of Health decided that the situation called for more drastic action, and on January 31st, 1911, a resolution was adopted, providing for the compulsory pasteurization of the entire milk supply of New York City except that of the special grades, beginning January 1st, 1912.

II. Grading of Milk Supply.

At the same time the Board adopted the outlines of a plan of classification of the milk sold in the city. This I have long believed to be necessary if we are to combine efficient sanitary control with the maintenance of a reasonable price for milk. I have always been impressed with the necessity of dealing with milk to be consumed by infants as a separate problem. Since the requirements are so much more exacting for infants' milk and since it has been well established that this grade of milk is much more expensive to produce and should command a higher price than can ordinarily be demanded for milk in general use, it would seem wise to separate the two problems. We enter here into the economic phase of the milk problem, only to find that it is closely bound up with the sanitary problem. Probably the most serious matter that has arisen in connection with the development of the close supervision of the city authorities over the production of milk has been the fact that it has not usually been possible for the farmer to realize an extra compensation for his milk to enable him more easily to bear the cost of the improved plant and additional labor of production. This matter of an increase in the price that a farmer must receive for his milk will become more and more urgent. Some dealers are, of their own accord, paying special prices, but this is by no means the universal practice. One of the principal reasons for the failure of the producer to realize a better price, after improving the sanitary condition of his plant, is the general unwillingness on the part of the public to appreciate this element of value and to pay an additional figure for a better milk. Any general advance in the price of milk, at the present time, however justified by the higher cost of production due to the demands of modern sanitation, would be regarded as the unjust extortion of a combination of dealers formed to raise the price. It is probable that when improvements are more universal and the relation of milk to the public health more generally understood, the public will be willing to pay a fair price for wholesome milk, guaranteed to be of good quality. Some progress has already been made in this direction in the introduction of the certified, inspected and scientifically pasteurized grades of milk, for which a higher price is readily obtained. While these special grades are, in general, safe for consumption, it is apparent that they go only a very little way toward solving the milk problem, since the total of milk of these grades constitutes only a small fraction of the total supply.

Some years ago a careful investigation was made of the different grades of milk sold in New York, from the certified milk of the Milk Commission of the Medical Societies, sold in bottles at from 12c. to 15c. per quart, down to so-called loose milk, retailing at from 4c. to 7c. a quart. With the exception of certified milk and some other special grades, the supply was unsuited for infant feeding on account of high bacterial count; that is, it was not clean. Much of the supply arrived in the city at a temperature above 65° F. and during the summer months would readily sour. The conditions under which it was produced subjected the supply to a more or less constant danger of infection from scarlet fever, diphtheria, tuberculosis and typhoid fever. It was the pressing problem of infant mortality and the need of better milk for babies which caused most of the agitation and resulted in most of the improvements which have since been made.

A scientific solution of the infants' milk problem demands that the field be divided and our efforts to preserve the purity of the total supply redistributed in a more economical and therefore more efficient manner. It would be an unnecessary waste of effort to attempt to raise the entire supply of 2,000,000 quarts to be standard of milk suitable for infant feeding. Yet the tendency hitherto has been to work on this basis. There is a temptation for the dealer to be unwilling to admit that his so-called market milk is not a fit food for infants when, as a matter of fact, there is not a city in the world whose milk supply is suitable for such purposes and it seems very unlikely that it could ever be brought to such a standard. To insist upon such a standard for the entire supply would raise the price of milk to a point prohibitive to the ordinary consumer and would involve much wasted effort. Bacteriological investigation has shown that milk which contains large numbers of the ordinary bacteria of the dust but no pathogenic organisms, may yet cause intestinal disturbances among infants, particularly when the resistance of the digestive tract is lowered by hot weather. Yet this same milk may be consumed without danger to persons of mature constitution. Then there is the large fraction of the total daily milk supply which is consumed in cooking and manufacturing. Time and money spent in painstaking inspection of milk destined for this purpose is a waste of valuable effort which should be devoted to babies' milk. It is therefore our problem and our effort to divide the stream of milk flowing each day into New York, into branches corresponding to the uses to which each kind is to be put and then devote the appropriate and only the appropriate attention to each branch.

With these conditions in mind we have provided for the classification in 1912 of all milk sold in the city into three official grades:

Grade A.—Sold in bottles only, is specially intended for infants and children. Three kinds of milk will be entitled to rank in this grade: (1) certified or guaranteed milk, produced under conditions of the highest cleanliness as controlled by inspections of the County Medical Societies and the Board of Health; (2) "inspected" raw milk drawn from tuberculin tested herds on farms complying with at least 75 per cent. of the regulations of the Department of Health regarding sanitary production and having an average bacterial count of not over 60,000 per cc.; (3) selected pasteurized milk, which must be obtained from farms complying with at least 60 per cent. of the department's requirements and subsequently pasteurized in strict accordance with the regulations of the department. These regulations prescribe the duration of the exposure to heat and the temperature to which the milk must be subjected and the manner in which it must be handled, before the term "pasteurized" may be used with official sanction. For the purpose of Grade milk of this class, the average bacterial count must not be over 50,000 per cc. when sold.

Grade B.—The second grade of milk will be regarded as suitable and safe for adults to use as a beverage. It will, of course, include all such raw milk as complies with the provisions required by the department for Grade A. In addition it will include milk pastuerized under the regulations of the department, and who selected raw milk which complies with the requirements for "inspected" milk in Grade A, but substituting physical examination of herds for the tuberculin test.

Grade C.—All other milk, not included in Grades A or B will be classified in Grade C and its use will be restricted to cooking and manufacturing. Pasteurization will not be required, but Grade C milk shall be sold only under a special permit from the Department of Health.

There are many important aspects of the milk problem and of the particular requirements which we are trying to bring about in New York by these new measures which I have had no opportunity even to touch upon in this paper. Within the limits of the discussion, I have felt obliged to confine myself to a statement of the main outlines of our problem and of the reasons for and the significance of the radical steps we are about to take. I believe that medical and sanitary authorities in general are coming to believe we as do, in the necessity for the wider use of pasteurization in protecting the milk supply of large cities, and that the experience of New York in this respect is full of significance for other communities which receive and consume milk under similar conditions. The proper grading of the milk supply has appealed to me for many years as one of the most important factors in the solution of this problem and with a special grade of infants' milk, officially established by the Board of Health and sold for such at a reasonable price, I firmly believe that a great advance will have been made in that splendid campaign for the reduction of infant mortality which is now receiving the earnest attention of sanitary authorities all over the world.

CARCINOMA AND SARCOMA IN EARLY CHILDHOOD.*

BY

Q. W. HUNTER, M. D.

Louisville, Ky.

Pepper wrote an elaborate paper on congenital sarcoma of the liver and suprarenal, and reported the case of a female child, apparently normal at birth, who had at the age of three and a half weeks an enlarged abdomen which increased markedly until death at six and a half weeks. Autopsy revealed the right suprarenal the size of an English walnut, firm and hemorrhagic; the liver was the seat of an infiltrating growth and weighed two pounds eight ounces; the capsule was smooth and mottled (marbled) in appearance. On section it was found uniformly infiltrated by the growth to such extent that scarcely any hepatic tissue could be detected. The other organs were normal; there were no other secondary growths. The tumor was a lymphosarcoma.

A thorough search of the literature at that time revealed five other similar examples, recorded by Heaton, Orr, Parker, de Ruyter, and Meisenbach. All these cases occurred during the first weeks of life; all died within a few weeks; all had enormously enlarged livers which were infiltrated with a sarcomatous growth; three had also the suprarenals involved; one has a secondary growth lying between the spleen and kidney (suprarenal?) There were no other secondary deposits in any of the cases Four were females, in one the sex was not stated.

Simons operated by abdominal section upon a female child aged four years and nine months, removing a papillomatous cyst the size of an adult head which had developed rapidly. The only symptoms were vague, transitory pains in the abdomen, loss of appetite, anemia, icterus, some elevation of temperature, and gradually increasing abdominal enlargement. Palpation revealed the abdomen filled with fluid, and a solid mass was detected most prominent at the umbilical region pressing toward the right side. There was dulness in every direction on percussion so that it was impossible to clearly distinguish the outlines of the tumor. Sarcoma of the kidney was suspected. On examination under chloroform the tumor was found to occupy almost the entire abdominal cavity from the brim of the pelvis to the diaphragm. The surface was irregular and palpation demonstrated a semi-solid consistence. Median incision was made and a quantity of ascitic fluid immediately escaped. The cyst was found attached to the anterior abdominal wall and the omentum, and by a thin pedicle (three inches in width) to the right lateral wall of the pelvis. The cyst walls were friable and its cavity filled by a papillary growth presenting a cauliflower appearance. There was no elevation of temperature after the operation and the child made a prompt and satisfactory recovery. Histologically the mass consisted of papillomatous cysts containing mucoid material; the stroma was mixed, both adult and embryonic connective tissue being present, also bundles of unstriped muscle and plates of cartilage. The stroma in certain places looked "decidedly sarcomatous."

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*Continued from November Issue.

As an instructive example of tumors to be considered in and about the uterus in infancy, Lorthoir cites one of sarcoma in a child three years old In December a small fibrous mass, apparently a fibroma, was removed from the cervix; in March a partial vaginal hysterectomy by morcellment was performed; in June a total ablation of the uterine stump and appendages by the abdominal route, for an eronmous recurrence which filled the pelvis. Death occurred from shock. Autopsy showed involvement of the mesenteric glands. Microscopically the first tumor removed was fibroid, and all the tissue ablated at the other operation was "more or less sarcomatous" with small round cells.

Stowell exhibited a tumor of the liver removed from an infant aged nine and a half months. A modulated oblong growth extending from the epigastrium to the pubes filling the left side of the abdomen had been noted but four weeks previously. It was at first thought to be the spleen. About the same time a cystic tumor containing bloody fluid appeared at the angle of the lower jaw, and the microscope showed the presence of large cells. The blood of the child showed 85 per cent. hemoglobin; the white cells were not increased. The urine contained a trace of albumen and some waxy casts. Autopsy was permitted 24 hours after death; there was marked emaciation; no ascites present; liver filled the abdominal cavity and weighed two and a half pounds, nearly double the normal weight of the organ for an infant of that age; the left lobe was three times the size of the right, and consisted of an abnormal growth; the right lobe was infiltrated; there were no adhesions to the surrounding organs; heart, spleen and lungs normal; kidneys congested, but otherwise normal; sections of the liver showed increase of fibrous tissue, particularly on the surface; there was also marked increase of cells in the interior, some large and spindle shaped, but the majority were small round cells. The diagnosis was fibro-sarcoma.*

Churchill saw a child who had been well up to the third month of life, when it was noticed that the abdomen, on the left side, was beginning to enlarge. This continued and had been especially rapid during the last few weeks. Diagnosis, sarcoma of the kidney, and an unfavorable prognosis given. At the earnest solicitation of the parents an operation was performed, and the growth removed weighed over three pounds. The chief interest in malignant tumors of the kidney in children, says the author, is their etiology. The view generally accepted is that of Conheim, that they are of congenital origin "due to misplaced embryonic tissue."

Packard cites the case of a child aged three and a half years who had multiple sarcomata. There was a tumor in the left thigh, another over the left scapula, and a third at the angle of the jaw which later extended to the neck; the masses slowly increased in size. Sections taken from two of the tumors submitted to minute investigation were shown to be typical round cell alveolar sarcoma. Later there appeared a group of globular tumors, apparently matted together, on the right side of the neck below the angle of the jaw; a large mass of enlarged glands filled the left axillary space; the left scapular region was prominent from the presence of two large masses firmly attached to the bone, or to the supra—and infra-spinous muscles, and separated by a sulcus over the scapular spine. There was also felt a tumor the size of a duck egg in the left iliac region. A round cell sarcoma of the ovary the size of a man's head was removed from a thirteen year old girl by Rohrig. The tumor was of rapid growth; there were no metastases; a moderate degree of ascites co-existed.

Guibal successfully removed an ovarian sarcoma from a child less than three years of age, and reported his observation

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*The author said sarcoma of the liver in children was rare, that he had found record of only ten cases. The youngest was an infant of three weeks. Emaciation is usually marked, and ascites ordinarily absent, but gastro-enteric disturbances are common. Sarcoma is the commonest of the malignant growths in childhood. It attacks any part of the body where there is connective tissue. Sarcoma always develops from the mesoblast, while carcinoma arises from the epiblast of hypoblast. Sarcoma travels by the blood vessels, while carcinoma travels by the lymphatic channels.—*Q. W. H.*

before the Paris Surgical Society, (May 10th, 1911). The weight of the mass extirpated was 4.90 kgm., and the child was said to be well 13 months after the operation.

Homans records a case of sarcoma of the cecum in a girl five years old. The tumor and about an inch of the anterior wall of the cecum including a portion of the ileo-cecal valve were removed. Microscopic examination showed the growth to be composed of small spindle cells with a little homeogenous intercellular substance, and with the blood circulating in sinuses without definite walls. The diagnosis was made of spindle cell sarcoma originating in tissue about the intestine. The child is said to have made a good operative recovery.

Werder mentions a girl of 25 months that came under observation because of a small umbilical hernia which had been present three months Examination disclosed a growth larger than an egg in the left hypochondriac region. The neoplasm enlarged rapidly filling the left half of the abdomen from the ribs to crest of ilium, downward to the iliac fossa, and left lumbar region. It was not sensitive to touch and was slightly movable in antero-posterior direction. The child was healthy in appearance although there had been some wasting. Diagnosis, malignant disease of left kidney. Nephrectomy by six inch incision in left semilunar line subsequently enlarged additional two inches. The peritoneum over neoplasm was incised, thin surrounding capsule opened and peeled off, tumor lifted from its bed together with the kidney which was behind and continuous with growth. The pedicle ligated at hilum of kidney, cavity carefully sponged, abdominal wound united with silkworm gut without drainage. Urination spontaneously two hours thereafter and during night ten ounces voided. The child was dismissed from observation 15 days after operation and subsequently gained considerable flesh. The neoplasm proved to be a sarcoma originating from kidney.

Buchanan records a typical example of renal sarcoma in a male child of two years in which nephrectomy was performed. At nine months an abdominal enlargement was noted which gradually increased until it filled entire left half of cavity from border of ribs to groin and encroached beyond median line. No urinary symptoms were exhibited. The child had lately declined in weight, and at time of operation was in a debilitated state. The neoplasm was smooth, elastic, slightly movable, and gave all the physical signs of a solid mass. Incision on left semilunar line sufficiently large for extraction of the mass. When exposed it was found neoplasm developed between folds of meso-colon, the descending colon being stretched over its entire anterior surface from above downward A longitudinal incision was made through the external fold of meso-colon parallel with bowel, and the bowel and meso-colon covering tumor peeled away until base of the neoplasm was reached. A satisfactory pedicle was secured, consisting of the ureter and vessels supplying the kidney, and was ligated with silk and dropped. Only one vessel in the mesentery required ligation, and the entire loss of blood did not exceed an ounce. Gauze was placed in cavity until external wound was almost closed; this was finally removed and found dry, and the incision was closed without flushing or drainage. The neoplasm weighed six pounds and sprang from upper portion of kidney, which could be easily identified in lower two-thirds.

Steele reports four cases of renal sarcoma in children occurring in his own practice, and after reviewing other recorded examples says that the mortality was 45 per cent. following operative intervention. As these tumors grow rapidly and often attain enormous size, destroying life by mechanical progress, it is important that they be recognized early and receive prompt surgical treatment, since medical management is utterly unavailing. The disease is usually fatal in from six weeks to six months, although occasionally patients survive a year or more. The softer the tumor, says the author, the more rapidly fatal. After careful study Steele arrives at the following conclusions:

(1) These new growths of the child's kidney are often congenital.

(2) They are usually unilateral, when bilateral it is from secondary infection of the other kidney.

(3) They are primarily extra-renal, and surround rather than infiltrate the renal tissue.

(4) Round celled is the most common form of these sarcomas.

(5) They are of exceedingly rapid growth, and destroy life by exhaustion.

(6) They are uniformly fatal when treated medically, the duration of life being from four to twelve months from the time the disease is first observed.

(7) Nephrectomy offers the only hope of cure or prolonging life in these unfortunate cases.

(8) More accurate early diagnosis and prompt operative intervention has lowered and will continue to lower both the primary and secondary mortality.

(9) The extra-peritoneal route is preferable when the tumor is small.

(10) When large, a trans-peritoneal incision is imperative.

(11) It may be either transverse or vertical; considering the nerve supply of the parts, the transverse would seem the better.

(12) The operation of nephrectomy in these cases is justifiable, and "we are not doing our duty as surgeons to our little patients if we withhold the only chance they have for life."

Vance has operated in several instances for renal sarcoma, but only once has he encountered the disease in a young child. Operation in that case was performed under protest, the mother who brought the child from Virginia insisting upon it. The child had a sarcoma of the left kidney large as a cocoanut which was removed by incision in the semilunar line without opening the peritoneum. There was also an abdominal tumor nearly as large as the kidney slightly attached to the mesentery which was also extirpated. The child expired 36 hours after operation.

Cartledge records the case of a male child twelve and a half months old weighing in June 17 pounds. The child began to grow restless and fretful gradually losing weight and strength, would not stand, and had cut no teeth. The bowels were regular and no undigested food showed except at rare intervals; the kidneys acted freely and several times daily. Loss of weight continued until October when the child weighed about 13 pounds; examination several times during the summer, even late as the middle of September, detected nothing abnormal. In October, however, the author discovered a tumor size of cocoanut occupying right abdomen extending from lower border of ribs to crest of ilium and to median line; mass round, smooth, hard, movable, seemingly involved kidney. There was no local pain so far as could be determined, and no hematuria Diagnosis, sarcoma of the right kidney. Trans-peritoneal operation two days later. Uninterrupted recovery, child gained 15 pounds within a few months.

Pathological findings: Ovoid tumor four inches long, over three inches wide, nine inches in circumference, surface smooth except for raised band from pole to pole of original kidney tissue. Kidney capsule reflected over entire mass, pelvis seen between tumor and distorted kidney, neoplasm originated in outer wall of pelvis. On section mass composed of ovid nodules each encapsulated (?) Sections from several nodules showed complicated structure, tubular glands lined by one or more layers of epithelium, rounded collections of cells in alveolar and connective tissue separating tubes from each other and the alveolae. Elements typical in arrangement and character of cells of which composed. Epithelium in tubules principally cubical varying in size and staining properties, some stained deeply, others lightly; alveolar arrangement probably due to transverse section through tubules filled with epithelial cells. Tubules and alveolae in clusters, little well developed connective tissue separating them, surrounded by stroma of connective tissue embryonic in type. No glomeruli in tumor proper. Remains of kidney show elements of renal structure in normal condition, not infiltrated by abnormal tubular or embryonic connective tissue. At first sight sections resemble embryonic kidney, closer examination reveals atypical arrangement of elements and large amount of connective tissue; many areas look like adeno-carcinomatous tissue, but there is no breaking through basement membrane of tubules and alveolae by epithelial cells; while glandular tissue predominates, yet presence of so much embryonic connective tissue confirms diagnosis of adeno-sarcoma.

Davis operated for sarcoma of the orbit in a child of two and a half years. There was no pain and the child was the picture of health. Recurrence of the neoplasm in less than two weeks involved all the sinuses, optic neuritis was pronounced, and a second and more thorough operation was performed. Shortly thereafter the other eye and also the face became markedly infiltrated, right arm and right pectoral muscles swollen gangrene supervened, and the child died about a month after the first operation.

The practical indication for treatment of sarcoma in infancy and childhood is identical with that applicable to the disease when encountered in later life, viz: it is primarily and distinctly surgical. Moreover, any operation to be permanently affective must be radical in character. It must be remembered, however, that the surgical axiom to "cut wide of the mark" cannot always be strictly observed when operating upon patients afflicted with malignant disease involving certain glandular structures and internal organs, hence of necessity the operation must oftentimes be incomplete; yet it cannot be gainsaid that incomplete surgery is occasionally justifiable since it may afford temporary relief and enhance the comfort of the patient.

It is admitted without disputation that there is practically no medical treatment of sarcoma which promises the patient any material prolongation of life, unless it be the injection method originated and practiced by Coley; but the writer having had no experience therewith does not feel competent to discuss its merits or demerits. However, as suggested in the conclusions of one of the observers cited in the foregoing, no means of treatment should be neglected which promises any measure of comfort to the patient even if it may not positively insure material prolongation of life.

The principal *raison d'etre* of this contribution, and the writer's main object in citing the foregoing examples of sarcoma in infancy and childhood, originated in a desire to emphasize the facts that:

(1) Malignant disease is much more common in infancy and childhood than ordinarily supposed.

(2) In many instances the disease is congenital, though it is far from the truth to claim it is inherited as that term is at present understood.

(3) In not an inconsiderable number of instances infants have succumbed to exhaustion resulting from renal sarcoma, the essential cause of death not being recognized until necropsy was performed.

(4) The clinical course of malignant disease in the young differs in no essential respect from that which is observed in adult life under similar circumstances.

(5) Likewise the result of medical, mechanical or operative treatment is practically identical it matters not at what period in life the disease is encountered.

(6) The prognosis in malignant disease, whether it be in old age or infancy, is always exceedingly grave no matter what may be the circumstances.

(7) Complete and permanent restoration to health by any method of treatment,—surgical, medical, mechanical or

otherwise,—is seldom attainable even under what may seem at the time most favorable and promising conditions.

(8) While surgical intervention is for the most part unsatisfactory and successful results accrue in but a small percentage of cases so far as permanent cure is concerned, yet it offers practically the only promise of material prolongation of life.

(9) It is an indisputable fact, however, that in rare instances undoubted malignant disease in certain situations has been completely eliminated by medicinal, mechanical and surgical means; but in *rerum naturae* the percentage of permanent cures must always remain inconsiderable compared with results obtained in other diseases.

As much of the material presented in this paper has already appeared in medical print, the writer desires to express his thanks to both authors and publishers for the privilege exercised in abstracting and epitomizing the same.

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PROPHYLAXIS AND TREATMENT OF INFANTILE PARALYSIS*.

BY

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Consideration of the control of a disease causing an increasing percentage of morbidity among children and probably 50 per cent. of the permanent disability in cripples, may well merit the attention of this society. With over 8,000 reported cases of infantile paralysis in the United States during the past year, we can assume twice as many invasions, with a mortality of at least ten per cent. and more or less lasting incapacity in fully 60 per cent.

It is only a matter of a year at most since preventive medicine, enriched and emboldened by laurels from a score of hard-won fields, could claim any perceptible advance in the world-wide campaign against this insidious and deadly foe of child life.

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*Read before the Colorado State Society, at Steamboat Springs, August 15, 1911.

Thanks to the epoch making discoveries of the Rockefeller Institute and to the individual investigations of many other workers, we now possess a sufficient knowledge of the natural history of epidemic poliomyelitis to cope successfully with its spread wherever modern medicine is sustained by adequate health ordinances. For the present, sporadic invasions, which we know either reflect some distant infection, transmitted through abortive cases or by healthy carriers, or are due to a microbic origin other than that of the epidemic form, must remain beyond the reach of sanitary science.

It is entirely probable that the occasional cases of infantile paralysis, as noted with its congener, cerebro-spinal meningitis, may be due to a variety of micro-organisms whose exalted virulence is limited to the single individual. With equal right we may infer that the etiologic factor, in all cases constituting an epidemic, is identical.

In outlining the prophylaxis of a disease so entirely in conformity with the characteristics of other specific fevers of childhood, the well known methods employed in the eradication of the latter infections are to be considered and utilized on a scale commensurate with the gravity of the affection.

These agencies involve: (*a*) Isolation of the patient; notification of the case and quarantine for four weeks.

A number of states, Kansas, New York, Iowa and Massachusetts for example, now include infantile paralysis among the reportable diseases and exact a fine for failure to notify the proper authorities. (*b*) Disinfection of the patient's naso-pharynx throughout the disease with a one per cent. mentholated solution of hydrogen peroxide; disinfection of stools and urine until it is definitely determined that these are not infective agents. Osgood and Lucas[1] showed it was feasible "to transmit from monkey to monkey a typical poliomyelitis from the filtrate of the naso-pharyngeal mucosa of monkeys dying without other discoverable infections six weeks and five and one-half months respectively after the acute stage of the disease."

(*c*) Fumigation of the sick room with formalin and sterilization or incineration of all articles coming in contact with the sick.

The quarantine imposed should be absolute so far as children are concerned. Attendance at school, church, theatre or other places of public assembly should be rigorously interdicted. Wickman,[2] in his classical study of the Scandinavian epidemic of 1905-6, demonstrated clearly the role played by the village school in the dissemination of contagion. Fortunately, infantile paralysis is distinctly a disease of the summer months, so in this country at least, this menace is very largely eliminated. That insanitary, ill-ventilated death trap known as the moving picture theatre, however, would more than compensate for this in time of epidemic.

During an epidemic, much may be done extra-professionally by an efficient health department in acquainting the public with the manifestations of the disease, the manner of its spread and the recognized measures for its suppression.

Municipal ordinances requiring the daily sprinkling of streets are desirable, many clinicians believing the infection to be spread through dust.

Temporary closure of public swimming pools is indicated. Williamson,[3] reports a fatal case in a boy after spending two hours in a public bath at Manchester, and another, seen twenty years previously, with precisely the same history.

If, as Flexner suggests, the virus of infantile paralysis is expelled through the secretions of the nose and throat, the menace of common bathing establishments in time of epidemic is apparent.

Two further cases suggesting this mode of inoculation are described by Sutherland and Robinson,[4] while Lovett,[5] in his review of 150 cases, states that 62 gave a history of swimming or wading in stagnant water just before onset.

These reports throw a very interesting side light on this phase of prophylaxis and certainly strengthen materially the contention that infection emanates, probably through reverse lymph currents, from the upper respiratory tract.

The use of public drinking cups must be prohibited, and the milk supply investigated. From analogy we may infer that epidemics of infantile paralysis may be propagated through infected milk, Case I. quoted below illustrating this danger in a very striking manner. Wickman attributes at least one outbreak to this source. Another valuable aid in the successful management of an epidemic is the administration of urotropin to those exposed, particularly to the children in a family where the disease is found. Early diagnosis is essential to this protection, as well as to anything approaching satisfactory treatment.

The experiments of Flexner and Clark,[6] confirm the findings of Cushing and Crowe, who employed urotropin to disinfect the cerebro-spinal fluid. Among their deductions we find this statement:

"When the virus of poliomyelitis is injected into the cranial cavity of monkeys, in which the urotropin is already present in the fluid, and the drug is administered daily by the mouth thereafter, in a certain proportion of the animals so treated, if not in all, the incubation period of the disease is prolonged from six or eight to twenty-four days, and next, the onset of paralysis is entirely prevented. When the drug is given by the mouth and the immune monkey serum by injection into the subdural space, the paralysis can also be prevented and possibly with greater certainty." So much for prophylaxis.

Treatment.—The management of a case of infantile paralysis embraces the combined skill of the pediatrist, the neurologist and the surgeon. In epidemic form, the additional services of a trained sanitarian would be essential. For the general practitioner, however, to whom these remarks are especially addressed, who must be his own neurologist and pediatrist—his own specialist in every sphere of medicine—a comprehensive plan, based on the recent remarkable developments in pathology and etiology, may be outlined and followed with far greater success than attended our best efforts only five years ago. Perhaps the first and chief desideratum in this connection is to disabuse our minds entirely of the idea that victims of poliomyelitis are beyond help within a year from the onset of the attack. This pernicious doctrine has been handed on from one text-book to another until it has been accepted as axiomatic. It has probably consigned more children to a life of utterly unnecessary limitations than any other error we have fostered.

As a matter of fact there are very few cases of infantile paralysis that may not be benefited, regardless of the extent of disability or of the period treatment is inaugurated. Barbarin,[7] stresses this point in his plea for continued treatment despite apparent failure, and cites cases from his practice where a surprising awakening in the affected muscle groups occurred two to twelve years after the stage of onset.

Strunsky,[8] in reviewing 1100 chronic cases at the Hospital for Deformities and Joint Diseases, New York, treated by the simplest methods but over long periods, finds progress has been made in every instance. Improvement under similar management fourteen years after the initial symptoms, has been reported by Frauenthal[9].

The treatment of poliomyelitis resolves itself naturally into three stages, acute, subacute and chronic. In the first period, lasting from one to four or five days, we may encounter all the phenomena peculiar to the specific infectious fevers, notably high temperature, vomiting, hurried or irregular respiration, increased pulse rate, delirium. In other cases, the patient may pass rapidly through this stage, and be found quite helpless, through paralysis, at the physician's first visit.

In either case, the early days of an attack are characterized quite without exception by an almost unconquerable stasis of the bowel, calling for the immediate use of calomel, castor oil or high enemas. The keynote of therapeusis in this acute stage however is rest, as absolute and uninterrupted as it is possible to provide. To avoid increased congestion in the inflamed areas, we place the patient either in the prone position or on the side, which in addition affords an opportunity for counter irritation if this measure should seem indicated. Opinions differ regarding the wisdom of employing such irritants as mustard, turpentine or the actual cautery with the majority favoring their abondonment. Lumbar puncture should, however, be a routine procedure whenever pressure symptoms are manifested.

With respect to the administration of drugs at this time, it has been shown above in discussing the prophylactic use of urotropin, that the exhibition of this agent in both experimental and natural cases of infantile paralysis is accompanied by marked benefit. Urotropin, or rather one of its decomposition products, formalin, can be recovered from the spinal fluid a few hours after ingestion. Its use seems rational and certainly should be encouraged in every case. The dosage will vary with the age of the patient, two grains every two hours for two or three days, in a child of one year probably being ample.

For the pain, restlessness and general discomfort complained of at this time, hot packs will prove the most gratifying remedy at our disposal. They may be given without disturbing the child, and are certain to promote free diaphoresis, relieve the nervous excitation and induce sleep. The use of ergot, belladonna, potassium iodid, the salicylates, salol and antipyrin are mentioned only to be condemned. Hydrotherapy meets the indications better than anything else in our armamentarium.

In the second stage, continuing from the decline of the fever to the disappearance of the muscular pains, a matter of one to three weeks or more, we direct our attention to the prevention of such deformities as are produced by the antagonistic pull of healthy muscles on those which are paretic or paralyzed.

Sand bags and pillows, properly adjusted, are of great service here, and in paralysis of the extensor muscles of the foot, one of the most common results of an attack, the use of a firm support on the plantar surface, held in place by adhesive plaster, in conjunction with passive movements, will ordinarily avert the tendency to foot-drop.

For the hot pack, the daily full tub bath is now substituted and gentle massage begun, together with the use of the faradic current. Electrical stimulation of the paralyzed muscles should not continue over fifteen minutes at one sitting and should be withdrawn entirely if, in the attempt to secure contraction, great pain ensues. Strychnia (gr. 1-300 for a child of one year, t.i.d.) is recommended by many authorities at this time, and the tendency to obstipation must in all cases receive careful attention.

With the disappearance of the hyperaesthesia, it will be found that some muscles, apparently paralyzed, are again functioning. The pathological picture explains readily this prompt return to a normal state, and the efforts of the physician, from here on, in what we may characterize as the paralytic or chronic stage, should be concentrated on arousing anterior horn cells adjacent to the necrotic focus in the cord, to take up the work of the dead cells.

In the meantime we maintain the individual muscles involved in the highest state of nutrition possible, in other words we keep them in a receptive mood to normal stimulation through the nervous system. Improvement must come, as Strunsky says, from a substitution of duty in the cord cells, not through a regeneration of dead elements. In the consummation of this vicarious function, drugs have absolutely no place. The key note in the management of an old case of infantile paralysis centers in systematic muscle education.

Berry and Van Denberg,[10] Williams,[11] and a number of others report the most gratifying success from simple muscle training, carried on patiently over long periods, winning first the confidence of the little patients and encouraging them in all possible ways to persist in the gymnastic exercises outlined.

I can confirm the observations of Williams that movements of this kind can more easily be learned in the bath, the buoyancy of the water aiding in their accomplishment.

If one limb only is paralyzed, the child is instructed to attempt repeating simple exercises performed by the sound arm or leg. If both limbs are affected, then a brother or sister or a companion must be enlisted and the cripple directed to copy the drill advised by the medical attendant.

With these exercises, deep massage and galvanism are combined. Any intelligent mother may be taught in a short time how to apply the galvanic current to the flaccid muscles and how to perform proper massage. The rest depends largely upon the parents and attendants. If they are willing to give freely of their time and strength, if they can patiently persist month after month, satisfied to find almost imperceptible gain alternating with marked strides toward recovery, their efforts will be amply repaid.

When medical measures fail, and hydrotherapy and mechanotherapy are proven insufficient to restore the stricken muscles to a state of usefulness, surgical intervention should be considered. The orthopedist or the experienced general surgeon, through such operative maneuvers as are indicated in tenotomies, tendon-muscle and nerve transplantation, arthrodeses, etc., may restore a paralyzed limb after other agencies have yielded nothing but disappointment.

In conclusion, we may hopefully look forward to serum therapy for a specific against this formidable infection that will prove quite as potent as the anti-toxin of epidemic spinal meningitis.

I take the liberty to report here the two following cases, illustrative of the acute and chronic types:

Case I.—L. C., age two years, daughter of a physician practicing in Castle Dale, Utah.

This child enjoyed exceptionally good health until six weeks prior to the onset of poliomyelitis, when whooping cough developed and ran a very severe course. On October 13, 1910, without other manifestations than those associated with the bronchitis present, she was stricken with paralysis of both lower limbs. Obstinate constipation ensued and the child suffered great pain in the lumbar region and down the legs. The temperature during this acute period never rose above 101°. After one week, the patient was removed to Denver, and kindly referred to me by Dr. Hall.

Examination showed a flaccid paralysis of the extensor groups in right thigh and leg, with paresis of the corresponding muscles on the left side. The knee jerk was restored on the left, demonstrating the usual rapid process of repair seen in practically all cases of infantile paralysis.

The treatment above outlined was carefully followed and on November 30, a month and a half after invasion, the child was taken home, with function of all mucles fully restored.

An interesting feature of this case was the development of a paralytic affection in hogs near the home of the patient just before the invasion in the child. The milk used by this little girl was bought from the family owning the diseased hogs, and one attendant cared for all the domestic animals. The milk was neither sterilized nor pasteurized. These facts, strongly suggestive of transmission of poliomyelitis through the milk supply, were brought out by Doctor C—— in his efforts to trace the source of infection.

Case II.—K. M., age 21 months, residence Denver; previous history uneventful. May 1, 1910, while visiting at Greeley, on the night of the second day of his departure from Denver, was seized with an acute infection, with high temperature from Tuesday until Saturday. He was treated for pneumonia by a local physician of excellent repute and the paralysis of both lower limbs not recognized until the child's return to Denver a month later. From June, 1910, until February, 1911, the case was under the observation of a neurologist, two electrical treatments a week being ordered, and in the meantime two tenotomies performed for the relief of *talipes equinus*. Following these operations, braces were used to maintain the muscle balance. Massage, baths, systematized exercises, passive movements were all ignored and at the time of my first examination the boy was in a most pitiable condition, having been fully eight months without rational treatment. All of the extensor muscles in both limbs were atrophied, there was a flaccid paralysis, pronounced foot drop, flail knee joints and the patient's general health greatly undermined. It seemed a fair case to determine the value of the measures recommended in this late stage of infantile paralysis, and for the past six months all of these have been faithfully employed. From a helpless and apparently hopeless cripple, the child has developed into a robust, happy little fellow, able to climb up stairs, stand up without assistance and making such rapid progress that a life of usefulness is now assured. We discarded splints and have found no need thus far for surgical procedures.

In the management of this case, I was greatly indebted to Dr. E. W. Lazell, who in consultation, after a period of non-improvement, recommended the use of alternate hot and cold packs to the spine. Following their systematic use, there was an immediate and permanent gain, justifying their employment in subsequent cases.

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INFANTILE PARALYSIS: ETIOLOGY AND PATHOLOGY*

BY
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In opening the symposium on Infantile Paralysis with a consideration of the etiology and pathology the author of this paper cannot bring any new facts to light based on personal investigation. To my knowledge there have been no epidemics of this disease in Colorado nor have sporadic cases been very frequent. The opportunities for autopsy studies and microscopic examination of the nervous system in this disease have therefore, been extremely limited, while original research on the causative micro-organism can only be carried on in a well endowed laboratory where the price of monkeys for experimentation purposes is of secondary import.

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*Read before the Colorado State Medical Society Meeting, Aug. 15, 1911.

I must therefore, ask your kind indulgence if I bring before you a mere resume of the principal investigations, that have been made by noted workers in this field. Practically all of these researches have been published in the past five years.

Like every other disease whose origin is obscure, all sorts of possible and impossible causes from fright to trauma, were included in the etiologic list of infantile paralysis. In the light of recent discoveries all these vague predisposing factors that burden our text-books have been thrown on the scrap heap. We are now certain that acute poliomyelitis is an infectious disease. Although the causative micro-organism has not yet been isolated nor even observed the infectious nature of the disease has been proven beyond the shadow of a doubt.

The fact that acute poliomyelitis is a transmissible disease was first shown in the summer of 1909, when Landsteiner announced the successful inoculation of monkeys with material derived from the spinal cord of a fatal case in man. The animals after a period of incubation developed symptoms similar to that in the human being, and the nerve lesions were likewise found to be identical. Reinoculations were not successful. Soon afterward Römer and Joseph of Marburg began an exhaustive investigation into the nature of the virus. By inoculating material from the cord into the peritoneum of monkeys the disease was successfully transmitted in a small fraction of the animals used for experimentation. It was not until Flexner and Lewis of the Rockefeller Institute who were making similar researches at the same time introduced the intracerebral route for the inoculation of the infectious material that the disease was successfully transmitted from man to monkey almost every time and that reinoculation through several generations of monkeys became a reality. Flexner and Lewis have reported continuous inoculations through twenty generations without impairing the virulence.

In view of the difficulty and expense involved in securing the simians for these experiments the transmission of acute poliomyelitis to the ordinary laboratory animals became a great desideratum and would have placed the research work within the reach of a large class of workers. Soon after the publication of the infectious origin of poliomyelitis as proved by transmission to monkeys, Krause and Meinicke reported successful inoculations of rabbits with virus taken from human cases. Other investigators, notably Römer and Joseph could not confirm the findings of the first mentioned authors, although they endeavored to follow their technique. A very spirited controversy arose as to the validity of Krause and Meinicke's work.

The transmissibility of the disease to rabbits was generally regarded with skepticism. After sifting the evidence it seems that young rabbits of certain races when inoculated with the virus succumb after a period of incubation with symptoms remotely resembling those of acute poliomyelitis, but the characteristic pathologic lesions in the cord are entirely absent.

Marks has successfully transmitted the disease to rabbits down to the sixth generation and has proven the specificity of the infection by transfering the disease in typical form to monkeys. He explains the discrepancies in the symptoms and pathologic findings by the plausible assumption that animals may be carriers of the virus for a long time without impairing its strength and without being attacked by it. Under peculiar circumstances which we cannot as yet fathom the disease may be transmitted by these carriers to others. Sporadic cases perhaps arise in such a manner. Marks cites as corroborative examples the role of goats in malta fever and that of wild antelope in sleeping sickness.

What is the nature of the virus of acute poliomyelitis? From Flexner and Lewis's investigations it is clear that the causative micro-organism belongs to the same group as that of rabies, being so minute as to pass through the pores of the finest earthen filters. This is proven by the infectious character of the filtrate.

The virus can be preserved in glycerine for comparatively long periods without lessening its infectious character, thus differing from ordinary bacteria which are killed by glycerine. The virus also resists cold, keeping its strength at freezing temperature for more than two months. When allowed to undergo autolysis in the nervous tissue, it does not deteriorate. Even when dried over caustic potash it bobs up serenely as potent as ever.

The mode of entrance of the virus seems to be similar to that of the micro-organism of epidemic cerebro-spinal menigitis, through the nasal mucosa by way of the cribriform plate of the ethmoid. By inoculation experiments it had been found also on the buccal and pharyngeal and mucous membrane. The cord is chief depository for the virus, less so the spinal fluid.

The causative micro-organism is invisible under the highest power of the microscope and defies detection with the method of dark ground illuminations.

Pathologic Anatomy.

What we know of the pathologic changes in acute poliomyelitis we also owe to recent investigations. The epidemics in Sweden and Norway from 1903 to 1906 gave Wickman, Harbitz and Scheele the opportunity to make a thorough study of the lesions. In this country Robertson and Chesley of Minneapolis published their studies on the autopsy material from the Minnesota epidemic of 1909.

Some of our older notions as to the seat of the disease will have to go by the board, particularly the impression that the lesions are limited to the anterior horns of the cord. The word anterior will have to be dropped in the nomenclature. Strictly speaking it is not a poliomyelitis nor even a disease of the cord only. While the anterior cornua bear the brunt of the attack, the posterior horns are also affected. The white matter is also involved in the degenerative process. The lesions also extend up in the medulla, the pons crura and the cerebrum. Coincidently there is involvement of the meninges.

The older observers had already noted the degeneration of the nerve cells as well as the unusual engorgement of the vessels. It was long a matter of dispute as to which was primary and which secondary.

At present it is conceded that the vascular phenomena are the first results of the toxic action of the virus and that the enormous congestion of the blood vessels with consequent oedema and emigration of leucocytes produces pressure on the nerve cells causing their degeneration.

The lesions are most pronounced in the sacral and lumbar regions less so in the cervical and in other portions of the cerebrospinal axis.

The inflammation of the cord is also accompanied by a similar process in the pia mater consisting in a round cell infiltration, of the lymphocyte variety. The posterior root fibers and the arachnoid over the spinal ganglia are also the seats of the cellular infiltration. The principal site of the inflammatory process however, is in the cord proper. Owing to their richer blood supply the anterior horns are markedly affected. The vessels are highly congested, often dilated to twice their normal size. Hemorrhages are of frequent occurrence. There results an extensive edema and an infiltration of round cells mostly polymorphonuclear lying in the adventitial lymph spaces and in the surrounding tissue. Some of the emigrated cells are probably young glia cells. The infiltrations are both diffuse and focal. As a result of the pressure as well as of the direct toxic action there ensue interestitial changes in the gray and white matter. The ganglion cells may show all gradations of retrogressive changes.

As in all infectious diseases there is parenchymatous degeneration in other organs notably the spleen, kidney and liver. Of great interest is the enlargement of the solitary follicles and Peyer's patches of the intestine and swelling of the mesenteric gland.

The great advances made in the etiology and pathology of acute poliomyelitis encourage us in the hope that similar progress will be made in the therapy of this baffling disease.

THE SURGICAL TREATMENT OF POLIOMYELITIS.*

BY
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The increasing prevalence of poliomyelitis, the increasing frequency of its attacking older children and even adults, its occasional fatality and the constancy, severity and permanency of its lesions, all demand that the physician inform himself better concerning this disease than has heretofore been considered necessary. He cannot ignore it and place the responsibility of its care entirely on the specialist.

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*Read before the Pennsylvania Medical Society.

It is his duty to recognize it when it occurs, to direct the treatment during the acute stage, and give such aid as he can in the subsequent efforts made to obviate its evil effects. It is not right that these cases be allowed to wander around neglected and uncared for, crippled, and with their deformities and disabilities ever increasing. What can be done for them? During the acute stage rest is evidently indicated. The presence of pain suggests its necessity as well as the evident harm which would be done by moving parts so recently injured.

It is hardly necessary nor even desirable to encase the limbs in plaster of Paris, as has been suggested by some, but rather that they should be protected from the weight of the bed clothes by some light framework and that the toes be kept from dropping and the feet from sagging by the application of some form of temporary splints to be worn at night as well as during the day. All disturbances of the limbs, especially by rough massage and electricity, should at this stage be avoided.

The patient should be kept in bed for a month or six weeks. The presence of paralysis is almost essential to a diagnosis. It appears from the first to the seventh day of the attack usually, and is very rarely delayed as long as the fourteenth. If the paralysis has been so wide-spread as to impair the respiratory muscles a cold with its attendant bronchitis may cause a fatal issue. If, as is most often the case, the extremities and certain portions only of the trunk are involved then efforts to restore the lost muscular power to as large an extent as possible must be resorted to. All muscles are not injured to the same degree. Some seem to be practically dead, while others are hardly at all affected; between these extremes are varying degrees of paralysis. Means must likewise be employed to prevent the occurrence of deformities. After the acute stage has passed there is a second or intermediary stage in which a tendency is shown by the previously paralyzed muscles to resume their functions. The improvement is most rapid during the first six months and gradually lessens until progress appears to have ceased. Not much restoration is to be expected after one year, but it may continue slowly for two three or even more years. It is also during this stage that deformities appear from the lack of muscular balance and support and from the effects of gravity. As long as there is any grounds for hope of improvement no radical procedures, such as operations should be done.

The treatment consists of massage, electricity and exercise or education of the affected parts. Massage and electricity are of service for perhaps six months, hardly ever over a year. They too often distract the attention of the physician and those in charge of the patient from the really essential treatment, which is giving aid to the paralyzed limb, sometimes by apparatus and always by use and exercises. As has been pointed out by Dr. Mills, electricity should be carefully applied. Its value has probably been much overestimated. It does harm as well as good. If its use is restricted to the paralyzed muscles no harm is done; but as usually given it exerts its influence on the unparalyzed as well as the paralyzed muscles. This of course tends to increase the power of the former and aggravates their action in actively producing deformity. It is too difficult to restrict its action to the affected muscles to justify its administration except by those especially qualified to administer it. Apparatus is used to support the part and to substitute, as far as possible, the paralyzed muscles. If a knee is weak stability can be obtained with a brace. If the toe drops it can be held up by a rubber band. The unopposed action of the healthy muscles tends to still farther stretch the paralyzed ones. This can largely be counteracted by suitable appliances. When the body weight is placed on a paralyzed limb it tends to become distorted; braces prevent this. The objections which are sometimes urged against the weight of apparatus is not well founded. If it is skilfully adapted to the case its service is invaluable. It not only prevents deformity, but it promotes the restoration of lost function.

Don't expect to cure deformity with braces. First remove them by manipulative or operative means and then use the braces to keep the part in its normal position and prevent recurrence. Exercise is the most important agent. It consists in encouraging the patient to attempt to use the paralyzed parts. Braces require such an intimate knowledge of the structure and functions of the various joints and muscles that they should only be applied by experts. The exercises on the other hand must be largely directed and carried out by the patient and those in daily contact with him. The expert may suggest, but it is the family physician and parents of the patient that must see the treatment carried out. Fortunate is the child who has devoted parents and physician, who will give their time and energies to helping it learn how to make most out of the wreck that the disease has created. If the arms are involved, the child should be encouraged to use them in all possible ways. To draw with a pencil, to attempt to write, to dress and similar means. If the legs are affected, the child should be helped to stand, encouraged to creep, to cling to chairs and drag itself along. Crutches are often of service, also rolling chairs and similar devices and hundreds of others which the ingenuity of the physician and fond parents will supply. While there is life there is hope and in these persistent, intelligent efforts lie the main hope of future improvement. Finally, after two, three or more years, improvement apparently ceases. The child arrives perhaps at an age of greater activity, say seven or eight years. Then the question arises as to whether the support needed cannot be obtained by other means than by the apparatus employed up to this time. Then it is that operative surgery finds its field. If a limb has its balance destroyed by a partial paralysis then by transplanting some of the healthy muscles over to the paralyzed side the balance will be restored, In these cases the limb is always weaker than a normal one, but if the transplantation is successful, the restoration of balance prevents the weight of the body from causing deformity, and it then becomes stronger and ultimately a very useful limb results.

If the paralysis has been so extensive as to leave a flail joint, as not infrequently occurs in the foot, then the operation of arthrodesis or artificial ankylosis may be the most serviceable procedure. The movements of joints may also be limited by artificial ligaments caused to grow by the introduction of silk strands. These operations tend to eliminate the necessity for the use of braces. The various operative procedures for the relief of these paralytics are innumerable and their value depends on the ingenuity and ability of the surgeon to devise the particular procedure best adapted to the peculiarities of each individual case.

One should be on their guard against saying, "Everything possible has been done for the child" because surgery has made wonderful strides of recent years and in no field has its advances been more marked than in orthopedic surgery.

1814 Spruce Street.

SOCIETY TRANSACTIONS

Pediatric Section

NEW YORK ACADEMY OF MEDICINE*

Stated Meeting, Nov. 9, 1911

William Shannon, M. D. in the Chair

Acute Duodenal Indigeston in Children.—Dr. Fritz B. Talbot of Boston read this paper. He said that the intestinal canal was sterile at birth but soon became infected and remained so for the rest of life. The bacteria tended to belong to the acid forming group when the infant was fed with human milk, and to the putrefactive or alkali forming group when the food was cow's milk. Putrefaction commenced when the baby began to take cow's milk which contained larger quantities of casein than human milk and thus gave the putrefactive group of bacteria a suitable food to grow upon. Bile had the property of activating the pancreatic proferment steapsinogen into steapsin. Fat emulsification was favored by the presence of bile; when bile was occluded from the intestinal canal, the absorption of fat was interfered with and metabolism was abnormal. Bile had no influence upon the digestion of sugar, but it had been known for a long time that sugars had an unfavorable influence upon patients with acute duodenal indigestion. This disease was a relatively common one and during the past year there had been 24 cases in the Children's Medical Out-Patient Department of the Massachusetts General Hospital. The onset of the disease might be sudden with fever, vomiting, pain in the stomach, jaundice, clay-colored stools, bile in the urine, loss of appetite, etc.; or the onset might be insidious, without fever, following some indiscretion in diet, more especially as regarded the intake of fats and sugars. The disease appeared often as a complication of such infections as otitis media, diphtheria, and the exanthemata in 15 per cent. of the cases. The onset was sudden with fever and vomiting in 75 per cent.; the liver was enlarged in 74 per cent. and tender in 13 per cent.; the spleen was not felt in any case. Urobilinogen was absent from the urine in every case where there was complete obstruction to bile and was found in excessive amounts when the obstruction was removed. The stools were recorded as white in 36 per cent.; creamy in 14 per cent. and clay-colored in 50 per cent. of the cases during obstruction. When there was complete obstruction of the common duct, bile in the form of bilirubin was dammed back into the circulation, colored the tissues and a part oveflowed in the urine. The fat in the food was digested and absorbed only in part, and as a result there was a clay-colored acholic stool which was composed almost entirely of fat. In the majority of the cases these fats were in the form of soaps. In some cases there was constipation, in others diarrhea; the latter was due to the prolonged irritation of the intestinal mucous membrane, due to the stagnation and decomposition of fat which was brought about by the action of the intestinal juices and bacteria, thus complicating the duodenal indigestion with a secondary intestinal indigestion. When the bile again flowed into the intestine, the fat quickly disappeared and normal quantities of uribilinogen appeared in the urine. With regard to the treatment it was obvious that fats and sugars should be excluded from the diet. Proteins, especially meat, fat-free milk, or skimmed milk, and thoroughly cooked simple starches might be given with safety. Tincture of nux vomica should be given to stimulate the appetite. The mucus plug in the bile duct might best be reached by large doses of alkalies as, for instance, bicarbonate of soda.

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*This was a joint meeting with the Philadelphia Pediatric Society and the New England Pediatric Society.

The Value of the Duodenal Catheter in Studying Duodenal Indigestion.—Dr. Alfred Fabian Hess said that about one year ago he devised a duodenal tube which was a modification of the Gross tube used in adults. With this he found he could readily reach the duodenum, draw up the juices and make a study of the ferments. Although this tube worked fairly well he felt that it could be improved upon and, some months ago, he found that with a rubber Nelaton catheter he was enabled to pass through the stomach and enter the duodenum and more readily and quickly obtain the duodenal juices. This permitted him to make a study of the secretions, as well as the functions of the pylorus and certain pathological conditions, such as spasm and stenosis of the pylorus.

In acute catarrhal jaundice they met with one form of duodenal indigestion; the bile was dammed back, there was a lack of fat digestion, and fat appeared in the stools. This was a small part of duodenal digestion, for it was the main seat of digestion where different ferments were poured into it. When anything interfered with these ferments duodenal indigestion might result. There could be motor as well as secretory indigestion. Sometimes the food passed through the duodenum more quickly than at other times. Where there was an interference with bile secretion jaundice did not necessarily result. The subject Dr. Talbot had brought before the Section was one that would develop greatly in the future and would be approached not by an examination of the urine and of the ferments in the stools, but by a study of the ferments themselves in the duodenum; this duodenal catheter enabled one to approach this study.

Congenital Stenosis of the Bile Ducts a Hindrance to the Digestion of Fats.—Dr. Herman Schwarz emphasized the importance of knowing what was happening in various parts of the intestinal tract. Much knowledge had been gained in their work with animals, and Pavloff and his assistants had helped them. It was a step in the right direction to understand just what duodenal and other kinds of digestion was. Catarrhal jaundice and the effect on digestion of the absence of bile, especially on the digestion of fats, should be studied more and especially in that type of cases which occurred not so infrequently, congenital stenosis of the bile ducts. In this condition there was practically no digestion of fats and it was remarkable to find that instead of four to eight per cent. of fat 60 to 70 per cent. of the fat would be found in the stools. It was almost impossible to dry stools with such a high percentage of fat. Under normal conditions it was surprising the amount of fat the small intestines would take up.

Dr. Henry Dwight Chapin said that one year ago he had made a study of the motility of the stomach especially in atrophic infants. The trouble in these cases was not so much with the secretions as it was with the deficient muscular action. Duodenal feeding in this class of patients was very promising.

Dr. John Lovett Morse of Boston said that duodenal indigestion occurring in young children was much more common than generally supposed. He had seen a number of instances occurring in the beginning of the first week in life. One should be on the lookout for this trouble at any age. He said he was particularly interested in Dr. Talbot's statement that these patients did not do well when given sugars, but that they did do well when given starches.

A Study of Streptococcus Antibodies in Scarlet Fever With Special Reference to Complement Fixation Reactions.—Dr. John Albert Kolmer of Philadelphia read this paper. He said that many years before the development of bacteriology, investigators believed that in scarlet fever a specific contagion was present. The latest contribution to the bacteriology of scarlet fever had been made by Vipond. In his own investigations of the glands in 26 cases of scarlet fever, he failed to find any organisms resembling those described by Vipond. Since 1905 special interest in this subject had been renewed by Russian physicians who had made claims for the efficacy of prophylactic injections of streptococcus bacterins in scarlet fever. If streptococcus immunization did actually prevent scarlet fever, then the streptococcus bore a close relation to the disease and might be considered the specific cause. They have studied the antibodies of a number of different cultures from various sources, having in view the more accurate determination of the relation of streptococci to scarlet fever than was possible by morphological and biological studies alone, and the determination of the question as to whether the method of streptococcus immunization as practiced in Russia could be supported by laboratory investigation. On the experiments made the same cultures and immune sera were used. They believed that the following deductions were correct: (1) A streptococcus produced a specific antibody up to a certain limit. The specific nature of these antibodies was seen by complement fixation reactions in high dilutions between a streptococcus immune serum and its antigen. With low dilutions, however, the specific nature of the antibody was not brought out. (2) Not only did scarlet fever streptococci tend to produce their own specific immune serum but likewise streptococci causing septicemia and that causing non-scarlatinal angina tended to produce their own immune sera. Therefore, it did not seem any more justifiable to make such a claim for a specific streptococcus causing septicemia and other conditions. (3) Finding but 11.2 per cent. positive reactions in scarlet fever tended to show that streptococcus infection in scarlet fever severe enough to produce immune bodies was not so common as generally believed. One of the three toxic or malignant cases yielded a positive reaction. These severe cases were frequently due to an overwhelming effect of the true scarlet fever virus without secondary streptococcus infection. While it was difficult to understand how immunization with the streptococcus could prevent scarlet fever, they could understand, however, that immunization might be of value in preventing or mitigating secondary streptococcic infection which was present. Likewise it was possible that such protection would result by an increase in opsonins against streptococci. The question of method relative to the production of opsonins was very important and accordingly they had in view in this study: First to determine if the streptococco-opsonic index could be raised by an injection of heat killed streptococci. They had endeavored to find if the two or three doses of vaccine advised by the Russian physicians was sufficient to raise the opsonic index. Second to ascertain whether the opsonins produced by the different strains of streptococci were specific in nature. To these queries they offered the following conclusions: (1) It was possible to raise the streptococic-opsonic index by the injection of organisms killed by exposure of 60 C. for one hour. This increase was very slight with three or less administrations and became apparent only after a relatively large number of injections. (2) The increase in the quantity of opsonin after three injections was so slight as to make the likelihood of establishing immunity against streptococcic infection very dubious. (3) The opsonins were more or less specific toward the strains used in the process of immunization. The question as to whether streptococci stimulated the production of agglutins was one upon which investigators were far from agreeing. They had worked with this problem and concluded: (1) That streptococcus agglutins were produced slowly by experimental immunization and the quantity was quite variable. (2) That these agglutins were apparently non-specific in character and of no value in differentiating streptococci. (3) That they were demonstrated in 12.5 per cent. of scarlet fever patients but only in comparatively low dilution of serum. (4) That there was no relation between agglutination and complement fixation anti-bodies or between agglutins and opsonins. They agreed with those who claimed that streptococci found in scarlet fever patients whether in the throat, suppurating lesions, or in the blood, could not be differentiated from the streptococci normally in the throat or in septic conditions by morphological or cultural characteristics. If they were to claim a specific streptococcus for scarlet fever, a similar claim might be made for every other streptococcus infection and to claim a specific streptococcus for endocarditis and another for puerperal sepsis, etc., which seemed to be out of the question. They believed that the streptococcus found in scarlet fever belonged to the general class of streptococci and was modified in some way during the course of the infection so as to give it a somewhat specific antibody and occasionally temporary cultural characteristics. The same was true of streptococci causing septicemia and sore throat. With regard to the streptococcus immunization reported by the Russian physicians the thought that so little was really understood of the infection that these enthusiastic reports should be reviewed with health skepticism.

Discussion on Dr. Kolmer's Paper

The Value of Streptococcus Vaccine in Scarlet Fever.—Dr. Richard M. Smith of Boston said that it had never been definitely settled that the streptococcus had any direct etiological connection with scarlet fever. Despite the large amount of work which had been done on the single point of specificity of the streptococcus found in scarlet fever it was far from proved that the same type of streptococcus was always found in every case of scarlet fever or that the streptococcus found in scarlet fever was in reality different from that found in other diseases. Until this point was definitely proven they must remain skeptical in assigning the streptococcus as the cause of scarlet fever. The fact that streptococci were found in scarlet fever patients and that the blood of scarlet fever patients changed in its reaction toward streptococci did not prove the streptococcus as the etiological factor of the disease. Scarlet fever lowered the resistance of the individual to any intercurrent infection. Tunnicliff had shown that the opsonic index in scarlet fever patients was not only low for the streptococcus but also for the pneumococcus and the staphylococcus. Hence it was not at all surprising that this organism should gain a foothold and develop rapidly. The work of the Russian physicians in immunization was most interesting and important, but it must be borne in mind that the natural immunity to scarlet fever was very great. It was not at all uncommon to have a single member of a family contract the disease and none of the others be affected. It was not unusual for one child in a school to have scarlet fever and all the others escape although there was general exposure. It seemed that the number of persons actually protected by the vaccines in a Russian community must remain a matter of speculation. For a convincing demonstration of the value of vaccines the number of inoculated cases must be large, the control individuals many, and the observations extended over a long period of time. He had had but one opportunity to try this vaccination. An epidemic of scarlet fever occurred in a Boston institution last winter, but despite the fact that all of the children were vaccinated, many of them three times, no influence was evident on the spread of the disease. The children contracting the disease had light cases, but he could not say whether or not the vaccination was responsible for this. Thus far it had not been proven that streptococcus vaccine could prevent scarlet fever. The value of vaccines and perhaps serum in influencing the complications of scarlet fever was quite another matter. The majority of the patients who died succumbed to the toxemia of a secondary infection due in the majority of cases to the streptococci. If by giving vaccines or serum early in the course of the disease they could prevent secondary infections they might moderate the severity of the disease and greatly reduce the mortality. If those already infected with the streptococcus were vaccinated their powers of resistance might be increased so that they could overcome the infection and thus the mortality would be lowered. It was in this direction that they were to hope for most benefit from vaccines and serum.

Dr. William C. Thro said that only those actually engaged in this work could understand how tedious and laborious it was. As strain after strain was added to the antigen, more and more positive results were obtained. An increase to eleven strains would give more positive results than when only two or three strains were used.

Dr. Homer Swift said that the work recently done demonstrated that the streptococci were not the etiological factors in scarlet fever. The work done with the experimental fever in animals which was similar to scarlet fever in man seemed to indicate that scarlet fever was caused by a filterable virus. During the past year they had produced a scarlet fever-like disease in monkeys after first having depressed their resistance by injections of saline solution. The monkeys were injected with the coating of tongues from patients whose lymph nodes were free from streptococcus; they had used lymph nodes and after an incubation period fever, coated tongue, the typical strawberry tongue, and eruption followed by desquammations similar to that of scarlet fever occurred. He had also passed the extract of the glands through filters and obtained scarlet fever-like disease in monkeys. He had not obtained similar disease from the injection of streptococci.

Dr. Matthias Nicoll, Jr., said that while the streptococcus as a causative factor in scarlet fever seemed to be losing ground, they had not yet discovered the true nature of the infectious principle in scarlet fever and unless the finding of this infectious agent should lead to the means of preventing the disease the streptococcus would still have to be largely reckoned with. It was the cause of death in the vast majority of the cases. After a considerable experience in the employment of the anti-streptococcus serum, both by the subcutaneous and intravenous methods, he was unable to advocate its use in scarlet fever except in those cases which might be classed as general septicemia. On the other hand he was thoroughly convinced of its great value when applied freely and at short intervals to the mucous membrane of the pharynx and tonsils. He had demonstrated that in 18 cases of scarlet fever, ill from two to twenty-four days, enlarged but not suppurating lymph nodes, in four instances in the cervical region and in 19 in the inguinal region together with an inguinal node removed post-mortem from a septic case of the disease, in no instance showed the presence of streptococci or of other organisms. Here was a disease which involved the lymphatic system from the neck to the groin in forty-eight hours or less and apparently without the aid of any pyogenic organism. They might be justly suspicious of all reported cases of scarlet fever occurring in rabbits, such as Cantacuzene had recently announced. The rash of scarlet fever was frequently difficult of diagnosis in human beings and in an unshaved rabbit it was largely a matter of personal opinion. Furthermore, shaving rabbits did not better the situation as this process, owing to the delicacy of their skin, produced a dermatitis which persisted for a number of days. The temperature curve in these animals was erratic and easily disturbed and their throats and tongues were eminently unsuited to clinical observation.

Vaccine Inoculation, Prophylactic and Curative, of Typhoid Fever.—Dr. Phalen of the United States Army and Dr. J. G. Callison presented this paper. In speaking of the vaccine in this paper they had reference only to that used in the United States Army, which was prepared by Major Frederick F. Russell in the laboratory of the Surgeon General's Office in Washington. An old culture which had ceased to be pathogenic and which produced an abundant growth upon agar was inoculated upon agar in flasks constructed so as to give a known surface of media. At the end of eighteen hours the agar cultures were washed off with normal salt solution, put into flasks, and the culture killed by subjecting it to 55 or 56 C. over a water bath for an hour. During the process of sterilization, a count was made of the bacterial suspension for the purpose of standardizing, after which the culture was diluted with normal salt solution so that one cc. contained one billion bacilli and then one-quarter of one per cent. tricresol was added. It was then tested for both aerobic and anerobic bacteria, and as a further measure of safety guinea pigs were inoculated with it. It was sealed in ampules containing from one to twenty-five cubic centimeters. Every man enlisting in the Army was given the immunizing dose. The first injection was administered at the time of enlistment and consisted of one-half of a cubic centimeter. The second and third injections were given at intervals of ten days and consisted of one cubic centimeter each. The inoculation as made into the deltoid muscles near its insertion by means of an ordinary hypodermic syringe. They painted the skin over the site of the inoculation with tincture of iodine and after the inoculation touched the needle wound with the same solution. The reaction following the inoculation showed itself locally by an area of hyperemia around the wound and more deeply by a circumscribed area of induration; constitutionally there was some fever and malaise and in more severe cases there might be gastro-intestinal and nervous disturbances. It was to the records of our Army together with those of England and Germany that they must look for evidence of the practical value of vaccination against typhoid fever. The latest figures available from the service of the British Army were those of Col. R. H. Firth, R. A. M. C., covering the Colonial Army in India during the period from 1906 to 1910 inclusive. In 1906, among a military population 66 per thousand of whom had been inoculated, the typhoid rate was 15.6; the death rate 3.19; in 1907, the inoculated population having been 143 per thousand, the typhoid rate was 13.1 and the death rate 2.77; in 1908, the inoculated population having been increased to 225 per thousand, the typhoid rate was 14.5 and the death rate 2.76; in 1909, when the inoculated population was 613 per thousand, the typhoid rate was 8.9 and the death rate 1.58; in 1910, the protected population being 823 per thousand, the typhoid rate was 4.6 and the death rate 0.63 per thousand. In 1910, in a strength of about 70,000 men, 306 cases of typhoid occurred, in about 60,000 inoculated men only there were 155 cases. At the same time there occurred 151 cases among 10,000 men who were not inoculated. In the German Army in Southwest Africa during the Hereros campaign from 1904 to 1907 there were 16,496 men who participated 287 of whom took the inoculations. Among this force there were 1277 cases of typhoid fever, the rates being 5.09 per cent. for those inoculated and 9.84 for the uninoculated. The death rates were still more striking; among the inoculated the rate was 6.47 per cent., while for the uninoculated it was 12.8 per cent. Nowhere did they get such convincing evidence in favor of the practice of typhoid immunization as from the records of our own Army. During the past three years 60,000 men have completed the three inoculations, but twelve cases of typhoid fever have developed during this time and no deaths had occurred. The record of the camp at San Antonio during the past summer was most instructive. The division of 12,000 men stationed here had all been inoculated and but one case of typhoid fever developed and that was in a Hospital Corps man who had not completed the three injections necessary for protection against the disease. During the same time there were 49 cases of typhoid fever with 19 deaths in the city of San Antonio. During the same period between three and four thousand men were in camp at Galveston, Texas, and no case of typhoid occurred among them, while the city of Galveston furnished 192 cases of the disease during the existence of the camp. The city and the camp had the same water, milk and food supply. About three thousand men were scattered along the Mexican border in small camps, many of them in localities where typhoid fever was present, yet only one man contracted the disease, and he recovered. It was inconceivable that with such conditions the practical abolition of typhoid fever could have been affected without the use of the immunizing inoculations. In regard to the paratyphoids it seemed that neither the degree nor the constancy of the group reactions would warrant them in believeing that typhoid inoculations would be protective against the paratyphoid bacilli. In the Tropics it was likely that a fair proportion of the continued fevers were paratyphoids, and in such localities, inoculation might prove comparatively disappointing. Where the proportion of paratyphoid infections was found to be high the use of a mixed typhoid and paratyphoid vaccine might be indicated. The duration of the immunity conferred by inoculations was an important matter not yet decided. Firth placed the period at thirty months after the first immunization. Leishman thought that reinoculation should be given after two years. This was a point still to be cleared up as was also the question as to whether like small pox a second injection would confer practically permanent immunity. The sum of the opinion of the men who had treated typhoid fever by means of the vaccines was favorable. They agreed that it shortened the period of fever and the total duration of the disease; that it reduced complications and relapses; and that the mortality was lessened, being in the cases thus far reported 4.9 per cent. In the cases reported by Meakin and Foster of Montreal a distinct crisis was noted following the second inoculation in 50 per cent. of their cases. These men gave the largest doses of vaccine, from one to two billion bacilli. It had apparently been directly life-saving in all but a few hopeless cases. All were agreed that in cases where it caused no improvement it had done no harm. The dosage employed in the earlier cases usually ran from ten to one hundred million, but with increasing confidence the dosage had been increasing until at present it was usually from one hundred to five hundred million. It was probably that those who had been reporting negative of discouraging results had been using too small doses and that with increasing dosage even better reports that had thus far been received would be obtained.

The Therapeutic Use of Vaccines in Typhoid Fever.—Dr. James G. Callison said that he had treated in all 35 cases of typhoid fever with vaccines. Since the last report he had made he had treated 11 cases with one death and no relapses. In the 35 cases there had been four deaths and one relapse, with an unusual absence of complications. The causes of death were femoral phlebitis and its sequelae, double pneumonia, meningococcus, septicemia and a ruptured spleen.

Charts of six cases were shown as illustrative of the changes in temperature which were to be interpreted in the light of what was known as to the time of the production of antibodies following the inoculation of the vaccines. The charts showed that there was a marked change in the temperature at a time corresponding to the beginning and rapid production of the opsonins and agglutinins in healthy individuals. The contradictions to the use of the vaccines had not been worked out but it seemed certain that severe clinical manifestations did not forbid its use. In his article in the *Medical Record* of June 24, Dr. Callison had collected 323 cases of typhoid fever treated with vaccines which showed a mortality of 0.2 per cent.; certainly this compared favorably with the 16 per cent. reported by Bellevue and the Allied Hospitals. Dr. Callison had been using an initial dosage of five hundred million, repeating the injections at four day intervals and increasing the dose one hundred million at each subsequent injection. Any method of treatment that could show so low a percentage of deaths and relapses was worthy of further trial. (For a more complete report see Dr. Callison's article on "The Vaccine Treatment of Typhoid Fever," *Medical Record*, June 24, 1911.)

The Dietetic and General Management of Typhoid Fever in Children.—Dr. Charles Gilmore Kerley said that there was both a science and an art in the feeding of children whether well or ill. The child required food of definite nutritional value in an assimilable form; this was the science of feeding. It required variety and that the food selected be agreeable to the senses of the patient; this was the art of feeding. There was no ready-made diet in any illness in a child any more than there is a ready-made diet for the artificial feeding of infants with digestive deranagements. At the onset of every illness milk should be discontinued as well as all solid foods, for the reason that in every illness the child's capacity for food was lessened. It was Dr. Kerley's custom to give a laxative sufficient to produce several watery movements. The child was put on a temporary diet consisting of gruels flavored and perhaps one of the dried milk products until the nature of the illness was determined. In typhoid fever the diagnosis was rarely made under a week of observation and when it was definitely settled, the intestines under this regime, were free from distension with gas and undigested milk and the patient was less toxic and had a lower temperature than would have been the case had a freer feeding been permitted. It was a mistake to think that the diet they began with must be continued throughout the attack. Food would be tolerated during the latter part of the illness that could not have been taken earlier. Feedings were never given oftener than at three hour intervals. A diet schedule for a patient five years of age would be something as follows:

Six A. M. Eight ounces if gruel with sugar in small amount or broth added. Zwieback or dried bread and butter.

Eight A. M. A drink of weak tea with sugar or whites of one or two eggs with sugar in orange juice.

Ten A. M. Farina, cream of wheat, rice, served with butter, and sugar or maple syrup and butter. Drink of weak tea or kumyss or matzoon, or a little dried milk food, such as malted milk or Nestle's food.

Two P. M. Eight ounces kumyss matzoon, or skimmed milk diluted with gruel. Zwieback or dried bread and butter.

Four P. M. Orange egg sherbet or a drink of lemonade or tea and sugar.

Six P. M. Cereal or gruel with sugar and butter or with broth. If skimmed milk was not given at two o'clock it might be given with gruel at this time.

Ten P. M. Gruel with sugar or broth or with wine.

This would easily satisfy the claoric requirements of a child of five years though the diet was not an evenly balanced one, being high in carbohydrates and low in proteids. Fat in considerable quantities was poorly digested by young typhoid fever patients. Proteid in considerable quantities should not be given until something was known of the course of the disease. Milk, scraped rare beef and soft boiled eggs were not well borne in young typhoid fever patients. Carbohydrates were readily cared for when properly prepared and administered. Dr. Kerley did not advocate a milk diet in typhoid fever. The mixed feeding was not employed more generally for the reason that physicians failed to realize that other food stuffs might be taken care of easier than milk, and because of the fear of lay criticism for departing from an established custom. His favorable experience in intestinal disease with a diet other than milk together with the teaching of Dr. A. Seibert led him to use similar diet in typhoid fever patients. His observation had been that milk-fed cases suffered from more severe illness, increasing the danger to live, that the duration of the illness was longer, that emaciation was much greater and that convalescence was more protracted than cases fed as had been outlined. He had learned that in order to have a short, mild case the abdomen must be kept flat; tympanities was an indication of danger no matter how produced. On the mixed diet suggested it occurred only exceptionally. Drugs were of no service except to produce an evacuation of the bowels when there were not two movements in twenty-four hours or to check evacuations when there were more than four in that time. He did not attempt to reduce temperature unless it rose above 104 degrees F. In such instances the cold pack to the thorax and abdomen was employed. The cold pack applied to the head usually would relieve restlessness, irritability and sleeplessness. This method of treatment had the advantage of a milder course, shorter duration, more prompt convalescence, and usually; absence of complications.

Discussion on Dr. Phalens and Kerley's Papers

Dr. Charles Fife of Philadelphia said he had not given up entirely the use of milk in feeding children with typhoid fever, although he believed it could be used with damage if carried to a certain extent. One should study with care the digestive power of the patient. Milk was an important food element, and when skimmed it had a place in the treatment of these cases and should be used more than once a day.

Dr. Warren Coleman said that during the past few seasons he had been using a diet, the main object of which was to supply the patient with an amount of food necessary to cover the amount of energy lost. During the years 1908, 1909 and 1910 there had been 875 cases and 137 deaths in Bellevue and the allied hospitals. During this same period there had been 102 cases on a high caloric diet, with 11 deaths, or 10.8 per cent. If these high caloric dietetic cases were subtracted from the total there would be left 773 cases with 126 deaths, or 16.3 per cent. Among the interesting points Dr. Coleman brought out were that on the use of the high caloric diet there was a subsidence of the diarrhea with which the patients entered the hospital. In those cases in which hemorrhage occurred, the loss of blood was very little. Again, the convalescence was much shorter. He believed that high caloric feeding for typhoid fever patients was the best and was followed by the best results.

Dr. August Seibert said he had been connected with St. Francis Hospital for twenty-two years and he had not used milk in the treatment of these cases of typhoid fever during that period. Diarrhea, intestinal disturbances, toxemia, etc., were all increased when milk was given. The intestinal tract should be thoroughly cleaned every day.

RETROSPECT OF CURRENT PEDIATRIC LITERATURE.

Diseases of the Skin and Uro-Genital System

Under the Charge of

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Some Suggestions as to the Etiology of Pellagra.—Dr. Chilton Thorington, Montgomery Alabama, (in *New Orleans Medical and Surgical Journal*, September, 1911). The suggestions of the author that pellagra may be due to an infection, caused by mosquito bites, deserve some consideration, inasmuch as there seems to be some uncertainty as to the role that corn plays as a causative factor. Experiments hitherto made with corn have, in the main, been confined to the lower animals; this being true, much that is to be desired in the way of experimental data is necessarily lacking. Corn, whether sound or spoiled, fed to lower animals, has furnished not a single proof deserving of serious consideration, and the school which still insists that the grain is a cause of pellagra is having its intestine wars.

Lombroso endorses the claim of Von Deckenbach, who affirms, that cultures of oospora verticelloides produces phenomena in animals similar to that of pellagra. But Lombroso also admitted that rabbits, used in these experiments, did not die from a poison derived from corn, but owing to the impossibility of adapting the food used, to the natural requirements of herbivorous animals. Why did not Lombroso drop that hint before endorsing Deckenbach's claim? In other words, if sound corn killed rabbits in his own experiments, because of the impossibility of adapting the grain to the requirements of herbivorous animals, why should not sound, or unsound corn, plus the oospora, cause various manifestations of death?

Corn, according to most authorities, in order to cause pellagra, must be gathered and cured during damp seasons. It is stated that, following these seasons, the disease is most prevalent. However true that may be, it is equally true that damp seasons give occasion for increased numbers of mosquitoes. Should Sambon's statement be true, that pellagra is found where corn is neither cultivated nor eaten, that of itself would well nigh be sufficient proof against the specificity of the grain. In one of the author's own patients, with a well developed case of pellagra, she positively denied eating corn products since adult life.

Not only is the geographical distribution of pellagra tropical and sub-tropical, but it is possible to make the line of demarcation more arbitrary. Within a state pellagra is more common in the rural districts than in the towns and cities and, at least in the author's locality, more common in suburban than urban. This must assuredly be due to a more insanitary and unhygienic condition of the rural districts as compared to that of the city; in other words, it is quite possible that drainage is better in the city than the rural districts. The poorer classes seldom live in screened houses or sleep under mosquito netting.

Sambon's theory that pellagra is caused by the bite of the sand fly is questioned by L. O. Howard, chief of the Bureau of Entomology, Department of Agriculture, U. S.

The habitat of the sand fly does not correspond so closely to the distribution of pellagra, as does that of the mosquito.

Pellagra is frequently accompanied by such diseases as amebiasis, anchylostomiasis, malaria, etc., all of which, according to the doctrine *"noscitur ex sociis,"* tends to point to its parasitic origin.

The most successful treatment of pellagra, thus far, seems to be that adopted on a hypothetical parasitic concept.

Until something more definite is learned of the cause and dissemination of pellagra, the author is strongly of the opinion that pellagrous patients should be securely screened from the bites of mosquitoes. This is not intended, to be a suggestion to those in charge of such cases, for he is convinced that all necessary precaution is being taken by them, but a few doubtful cases may never come to the notice of the medical profession.

Just as malarial cases carry with them the blood parasite-hemamaeba and the same may be transmitted to others through the agency of the mosquito, acting as the definite host, so it may be possible for pellagrous patients to have in their blood some form of parasite, or protozoon, which, when injected into the human body, cause definite symptoms of pellagra.

He merely offers the foregoing suggestions with the hope and belief that further investigations will relieve the producers and consumers of corn from the losses the present theory would entail.

The Cause of Beri-Beri.—(Editorial Department, *New Orleans Medical and Surgical Journal*, for September, 1911.) Until comparatively recently the etiology of beri-beri was doubtful and various theories were entertained concerning it. Gradually the use of polished rice, in the large quantities which constitute the natural and economical diet of the Oriental natives, has gained ground as a causative factor. Reference is made here to a report from the Philippine native scouts by Major Weston P. Chamberlain.

In 1910 changes were made in the rations of these scouts who consist of about 5000 Philippinos. A reduction of the daily amount of rice per man was made from twenty to sixteen ounces, substituting unmilled rice for the highly polished grade formerly used, with the addition of various leguminous foods to the diet.

Major Chamberlain shows a great reduction in the cases of beri-beri and thinks there existed a relation between the decrease and the diet. The bearing on the beri-beri rate of factors other than the dietetic was carefully studied and the following conclusions were drawn as a result of the entire investigation or experiment.

1. Beri-beri has disappeared from the Philippine scout association since about the middle of 1910, eighty per cent. of the cases having occurred during the first quarter of the year, when the ration changes were just being put into effect.
2. No sanitary improvements have been made outside of the dietary and no corresponding decrease in the admission rate for other diseases occurred.
3. The occurrence of beri-beri in the general Philippino population was not correspondingly decreased.
4. The decrease of admissions for beri-beri among the scouts was marked for four months before the use of the undermilled rice began.
5. The decrease was noted also before the increase of legumes was made in the rations.
6. As the decrease could not be due to coincidence, it must have been due mainly to a reduction in the amount of rice and the addition of the legumen.
7. These facts not only do not oppose the polished rice theory of beri-beri production, but support it.

It may be added that the harmful influences of polished rice are not thought to be due to any injurious element present in such rice but to the absence of some substances necessary for proper nutrition, and it seems evident that the reduction in quantity and the use of undermilled rice are sufficient to prevent the occurrence of beri-beri.

A Case of Dermatomyositis.—Dr. George Blumer, New Haven, Conn., (in *Yale Medical Journal*, June, 1911). A schoolgirl of American parentage, aged twelve, was seen in April, 1911. Her family history presented some points of interest. The father had serious symptoms following the use of diphtheria anti-toxin several years ago. Her mother has had urticaria, and there is asthma in her family. One brother died of tuberculous meningitis in infancy. One brother cannot go near a horse without developing asthma; he had diphtheria anti-toxin without untoward symptoms. On the mother's side there is a history of malignant disease. The patient had eczema, gastritis and asthma when young. She had never before any symptoms suggesting angioneurotic oedema. She had also measles, whooping-cough, chicken-pox and mumps, all without any complications. Two years ago she had a mild attack of diphtheria followed by jaundice and a tendency to develop sore throats. After one of these attacks of tonsillitis she had an attack similar to the present one, but confined to the legs below the knees. She had muscle pain, superficial oedema, and a hemmorrhagic eruption over the affected parts. There was swelling of the small joints of the hands with this attack.

The present illness is of two months' duration. She first had a bad attack of tonsillitis affecting both tonsils. After recovery she developed soreness of the muscles of the legs so that she was not able to walk. There was marked oedema of the overlying skin and many purpuric spots. This extended to the arms and face. No fever, but anorexia and constipation. Soreness of the muscles and swelling was the chief complaint.

The muscles of the calves were hard and slightly tender. The backs of the hands were oedematous and the movements of the arms, especially supination was painful. There was slight oedema of the skin of the forearms and upper arms, and in places the muscles felt indurated and slightly tender. The urine had repeatedly been examined and was normal.

A blood count showed 4,880,000 red blood corpuscles, 9000 leucocytes and 95 per cent. hemaglobin. A differential count showed in 500 leucocytes 58 per cent. polymorphonuclears, 18.8 per cent. large mononuclears, 20 per cent. small mononuclears, four per cent. eosinophiles, one per cent. basophiles and 0.4 per cent. eosimophile myelocytes.

This patient presented the cardinal features of dermatomyositis, pain in the muscles associated with induration and tenderness, oedema of the overlying skin and dermatitis, on the face in the form of a transient erythema and on the legs as petechiae. There are several points of special interest in connection with this case:

1. The family and personal history of asthma and other conditions suggesting hypersusceptibility to horse serum. Meltzer considers asthma a phenomenon of anaphylaxis. What relation may have existed between hypersusceptibility and the dermatomyositis is conjectural.
2. The recurrence of the disease, if the history is to be relied upon. Apparently there was a mild attack limited to the legs before the more severe one.
3. The occurrence of both attacks after tonsillitis. In a good many instances this disease has followed infections.

The Diagnostic Value of Palpable Epicondyloid Glands in Children. —Dr. P. Grosser and Dr. A. Dessauer, Frankfort-on-Main, (*Muenchener Medizinische Wochenschrift*, 1911, No. 21). The induration of the epicondyloid glands in nurslings has been mentioned by Hochsinger as a characteristic of lues. The authors, owing to observations made on 1897 cases cannot agree with his opinion. Among 1066 nurslings of whom 15 had hereditary lues, 14 tuberculosis, 29 rhachitis and 1008 other diseases the following percentage only showed swelling of the epicondyloid glands: Spyhilitic children, 66 per cent.; rhachitic, 41.4 per cent. and others 4.6 per cent. In 831 children, who were more than one year old, the proportion in regard to the diagnostic value of the symptom was still more unfavorable. It was only found in 28.6 per cent. of the luetic, in 22.6 of the tuberculous and in 27.5 of the rhachitic children.

All other disturbances that may give rise to glandular swellings of like character (eczema, etc.,) were not considered.

Diseases of the Alimentary System

Under the Charge of

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Diagnosis and Treatment of Gastric and Duodenal Ulcers.—Max Einhorn, M. D., in (*Post-Graduate*, May, 1911), says the principle points to consider are the pains which occur during the act of digestion in the gastric and epigastric regions. There is vomiting and the appearance of blood either in the vomited matter or in the stools. Sometimes there is no hemorrhage or acute hemorrhage, but invisible blood may be discovered by chemical tests in the gastric contents or in the feces.

The presence of occult blood, according to Boas, is of great importance in the diagnosis. In gastric ulcer hemorrhages do not appear all the time. Sometimes these patients may have blood in the vomited contents of the stomach or in the stools which is quite manifest and later may have no blood at all. Hemorrhages do not occur all the time.

With regard to the differential diagnosis between gastric and duodenal ulcers the following points are of value. In gastric ulcer pains appear after eating; in duodenal ulcer they appear two or three hours later. In duodenal ulcer the pains are supposed to disappear after the ingestion of food. The English call this "hunger pain." I must say, however, that this is not a positive sign of duodenal ulcer; I have seen the same in patients with gastric ulcer.

Another important point is that in gastric ulcer we find occult blood, as a rule, in the stomach contents and in the feces. In duodenal ulcer we get no occult blood in the vomitus but we may get it in the feces.

A Clinical Study of Gastric Ulcer and Conditions Possible to Mistake for It.—C. R. L. Putnam, M. D., in the (*Post Graduate*, May, 1911). Gastric ulcers may be divided into two general classes: The very acute type causing sudden and violent hemorrhage, and the chronic type which results in thickening and infiltration of the stomach wall.

The first type occurs most frequently in anemic people, and we associate such ulcers with pale, well-nourished young women with a low hemoglobin percentage; in short, with chlorosis. Except as affected by the hemorrhage, the secondary symptoms of amenorrhea and constipation belong to the anemia. Such an ulcer may be a mere erosion of the mucous membrane, so that the first symptom is hemorrhage; or the ulcer may progress through the mucous membrane, giving the symptoms of indigestion, such as heaviness or fullness, pain some time after eating, and tenderness over the epigastrium. Then as the ulceration progresses into the muscularis mucousae a vessel may be eroded, producing hemorrhage.

To sum up: Acute ulcers present the symptoms of pain, indigestion, tenderness and hemorrhage; they have to be distinguished from gastralgia, hyperchlorhydria, pulmonary hemorrhage and cancer. Chronic ulcer may present a great diversity of symptoms, dependent upon hemorrhage, adhesions, ulcerations into other organs, as the pancreas, or upon peritoneal sepsis local or general and occasionally septic pleuritis or subphrenic abscess, appendicitis, pancreatitis or cholecystitis.

There will always be a percentage of cases in which an absolute diagnosis cannot be made without operation.

Combined Cardiac and Pyloric Stenosis.—T. Gillman Moorehead, M. D., in (*Practitioner*, June, 1911), says peptic ulcer of the oesophagus is only likely to occur under circumstances which promote a constant contact of oesophageal mucous membrane and of gastric juice. Such contact will occur (1) in diseases which lead to frequent vomiting, for example, nephritis and chronic gastritis; (2) in cases in which dilatation of the stomach, more particularly of the obstructive variety, exists; and (3) probably in cases where ulcers exist in the neighborhood of the cardiac orifice and lead to relaxation of that orifice. In many of the cases, however, that come under the third group the ulceration of the oesophagus is a direct extension from the ulcerated gastric surface.

Peptic ulcers in the oesophagus resemble in their appearance the more familiar gastric ulcers, and are liable to give rise to similar complications and sequelae, namely, perforation, hemorrhage, and stenosis. Occasionally, in the absence of such complications, a diagnosis may be correctly made by the occurrence of pain in the last part of the act of swallowing, and by tenderness on pressure over the lower end of the sternum. Confirmation may also be obtained by examination with an oesophagoscope. In most cases, however, a correct diagnosis can only be arrived at when stenosis has occurred, and given rise to more or less complete obstructive dysphagia.

A complete post-mortem examination was obtained, and it revealed as far as the stomach was concerned a condition of more than usual interest. (See plate VII.) A very tight stricture of the oesophagus, only allowing the passage of a fine probe, existed about half an inch above the gastric junction; above this the oesophagus was dilated and hypertropheid. Sections of the oesophagus in the situation of the stricture revealed only fibrous thickening, not the slightest trace of carcinomatous infiltration being present. The vertical extent of the stricture was less than a quarter of an inch. The stomach was enormously dilated and hypertrophied, the pylorus being found lying in front of the right kidney; the gastro-enterostomy opening was quite patent, the silk ligatures used being still in place after a lapse of more than six months from the date of operation. The cardiac pouch lying to the left of this opening was dilated somewhat, but it showed comparatively little hypertrophy. To the right of the opening, however, tremendous hypertrophy of the muscular wall existed, and this pyloric region of the stomach was much enlarged; the pylorus was puckered and just admitted the passage of a probe; above and to the right of the pylorus a pouch had been formed, evidently caused by the forcible drive of the pyloric segment in the direction of the occluded pyloric opening. The total length of the stomach was 14 inches.

A Neglected Phase of the Prevention of Summer Gastro-enteric Disease in Infants.—Le Grand Kerr, M. D., (*Medical Record*, June 10, 1911), says the time to commence treatment of the summer diarrheas of infants is in the late spring or at the latest the early summer. Gastro-enteric disease, as it is expressed in infants and young children, is not always an acute process. In fact, although it appears as an acute condition, it is uncommonly such, and careful history-taking will almost invariably reveal the fact that the acute process is one that is developed upon a soil which has been long prepared for it.

Thus the prevention of digestive disturbances is the largest factor in the limitation and prevention of acute gastro-enteric disease. In the treatment of the summer gastro-enteric disturbances, the prophylaxis demands that the digestion be normal or nearly so. And in calculating this factor we cannot put too much reliance upon the single factor of weight. Although weight is often a splendid indicator of the nutrition, it is not always so, and in estimating its value we must also pay considerable attention to the elements of comfortable digestion and the evidences of perfect assimilation. Serious summer gastro-enteric disease is not often sudden in its onset but may often be predicted because of the general condition of the infant; a condition which favors its development from a slightly active cause. On the other hand, the general condition may indicate that summer gastro-enteric disease will be successfully resisted. Thus if the infant experiences a normal, restful sleep, has regular and adequate bowel evacuations with a normal, well digested stool, has an oral cavity which is undiseased and kept clean, and is happy, contented and playful, it will probably entirely escape serious gastro-enteric disease or if infected will exhibit an immediate and successful resistance.

In the accomplishment of these objects there are several things that must be done. These might be briefly summarized as follows: (1) The explusion of the offending material from the stomach or bowel. (2) The dilution of the toxins. (3) The introduction of a food that is completely suited to the immediate needs and the securing of its absolute cleanliness and freshness. (4) The establishment of adequate hygiene of the mouth. (5) The maintenance of a clean skin, particularly that of the napkin area. (6) The protection of the food by clean utensils and careful attendants. (7) The protection of the infant by clean, fresh air and the best possible surroundings. (8) the isolation of the patient sufficiently to protect other children.

General Oedema Following Gastro-Enteritis in Children.—Wm. E. Hume, M. A., M. B., B. C. Cantab., M. R. C. P. Lond., in (*British Medical Journal*), says oedema developing in early childhood is sufficiently uncommon to render its occurrence a matter of interest, especially as its etiology is very obscure at this time of life.

My attention was turned to a group of cases of general oedema following gastro-enteritis in 1908, when I had four cases under my care in the children's ward of the Royal Victoria Infirmary at the same time. I could not find any evidence of heart or kidney disease in any of these. I utilized this opportunity to carry out some observations on the condition of the blood, the urine, and the effects of treatment.

The age, history, and clinical condition of the 13 cases are so similar that they justify inclusion in the same category. It will be most convenient to give fully the history of one case which was examined in detail, and to tabulate the results of the clinical condition and the treatment in the remaining cases.

R. E., aged two years, was admitted to the Royal Victoria Infirmary on October 12th, 1908. The mother told the sister of the ward that the child had been ill with diarrhea and vomiting in September (four to five weeks before admission); that the child never seemed to pick up after this gastro-intestinal upset, and that a fortnight after the cessation of the diarrhea and vomiting she noticed the appearance of oedema in the hands and face. She also told the sister that while the oedema was forming she thought that the child had passed less urine.

The child was drowsy. There was marked cyanosis of the face, hands and feet, which were also very cold; there was oedema of the eyelids, face, hands, arms, legs, feet and sacral region. On examination of the patient no abnormality could be detected in the heart; the lungs were clear, and there was no temperature. On examination of the urine neither tube casts nor albumen were found.

In blood drawn from the ear there were 3,500,000 red blood cells per cubic millimetre and 60 per cent. of haemoglobin.

I examined the coagulability of the blood on October 15th, and the coaglation time was similar to that of two other children in the ward, and of two clinical clerks tested at the same time. From the day of admission up to October 19th neither the sister, house physician nor I could feel a pulse in the radial artery. On October 19th I injected five minims of a 1 in 1,000 solution of adrenalin chloride, and in a few minutes the pulse was quite easily felt in both radial arteries, and later the hands became red and warm.

Five minims of a 1 in 1,000 solution of adrenalin chloride were administered hypodermically twice a day up to October 26th. By that time the child appeared perfectly well. The haemoglobin percentage had risen to 90, and the red blood cells numbered 6,000,000 to the cubic millimetre.

The child left the hospital on October 28th cured, and since that date I have learnt that he has had no similar attack.

I will now briefly summarize the clinical histories of the other cases, and for convenience I have appended a table; after which I will describe the pathological findings in two cases, and finally I will briefly discuss the causation of this variety of oedema.

Age.—The ages ranged from 13 months to four years.

Previous History.—In all cases, except nine and ten, there was an antecedent history of diarrhea and vomiting. In cases nine and ten, there had been attacks of measles four and three months previously. The mother was questioned in each case on the subject of the diet of her child, but there were no common factors or marked errors in the dietaries to throw any light on the etiology of the condition.

Distribution of the Oedema.—The hands and feet were affected in each case, and in seven cases the oedema was universal.

Cyanosis.—In all cases there was a degree of cyanosis of the extremities of each child, which could be removed by heat and by friction.

Blood Examination.—I have records of the blood examination of eight cases. In all these there was present some degree of secondary anaemia. The blood regained slowly the normal percentages of red blood cells and haemoglobin some time after the other abnormal features.

Oxypathy and Uric Acid.—Professor W. Stoeltzner, in (*British Medical Journal*, September 2, 1911). All lithaemic conditions are most easily produced by a diet poor in fixed alkalis and rich in incombustible acids, and are to be cured by changing the diet and making it rich in fixed alkalis and poor in incombustible acids. It is usual to treat lithaemic patients by making them drink alkaline waters, and this treatment is generally regarded as suitable. Into the further arguments in favor of the suggestion that lithaemia is a form of oxypathy I cannot go today, that would carry us too far; as to the details I must refer you to my book itself. Today I shall only ask the question how far the explanation of these diseases as due to oxypathy may have been of any value.

An author in the *Lancet* says there is little that is new in oxypathy apart from the name. I cannot help thinking that a little exaggerated. Oxypathy tries to give a satisfactory explanation of clinical facts and therapeutic experiences, of the recurrence of lithaemia in families and its tendency to be hereditary, of the injuriousness of unsuitable food and of the success of the approved dietetic and pharmacological treatment.

My view that the unsatisfactory development of so many infants fed on cow's milk is caused by a chronic alimentary poisoning by phosphoric acid has been remarkably confirmed by an interesting publication of Dr. Lade, who has demonstrated that the urine of infants fed on cow's milk contains more phosphoric acid and has a corresponding higher acidity than the urine of breast fed infants. Further, I have had occasion to treat with large doses of citrate of soda some cases of severe migraine and of invetrate neuralgia in gouty adult patients, with entirely satisfactory results; the patients felt better than they had done for years, and were perfectly convinced that citrate of soda had done them more good than any previous treatment.

I am now coming to a matter which I shall discuss today for the first time—the relation between oxypathy and uric acid. I think that uric acid is only to be regarded as a factor in those conditions which are connected with the specific gouty disturbance of the metabolism of purin bodies. The two characteristic points are: First, that the blood contains a demonstrable amount of uric acid even under conditions where it is normally almost perfectly free from uric acid; secondly, that there is a slow and imperfect excretion of uric acid after addition of purin bodies to the food.

Concerning the relation between oxypathy and uric acid, we see that the gouty disturbances of the metabolism of purin bodies are by no means a regular accompaniment or consequence of oxypathy; on the contrary, in the great majority of oxypathic conditions the gouty disturbance of metabolism is absent. That is especially true in early infancy; in infancy oxypathic conditions are extremely frequent, though the food is, as a rule, very poor in purin bodies and even almost free from them; we have no reason to suppose that the metabolism of purin bodies in these infants is disturbed; gout is as rare in infants as oxypathy is common.

Icterus Neonatorum.—Death of Five Children, Born Successively to One Mother.—Dan Millikin, M. D., in (*Lancet Clinic*, August 12, 1911), says: It is my object to place on record five cases of mortal disease in new born children, successive births in one family, wherein jaundice was the notable symptom.

The father of this family is a German, of good ancestry, good habits and good health, save for one attack of pneumonia and neuritis, to be described presently. The mother is an American of German parentage. Her health has always been excellent. She takes up all burdens, including maternity and bereavement, with admirable courage and cheerfulness. Both parents of these doomed children have many brothers and sisters.

They have had eight children born to them in twelve years.

The first three children are strong and beautiful specimens. One of them was slightly icterode in its first week.

The last five children have died, jaundiced, soon after birth.

One died, very tawny, within four days.

One held out fourteen days and developed a distinct bronchitis with a trivial cough and with no fever.

Not one was in good health for more than six days.

Each one might well have been called moribund from the very appearance of jaundice.

The fifth victim was a very vigorous boy, who developed jaundice on the sixth day and died on the eight. In that short time he became excessively pallid after the fashion of his predecessors.

All of these children were constipated but responded to ordinary doses of purgatives.

Black stools persisted only a little longer than in the average baby.

Hermorrhagic symptoms were absent.

In no case was there hemoglobinuria.

The kidneys did not excrete biliary products.

The five babies could hardly be said to have had any symptoms other than jaundice and sopor deepening to coma and death.

The Reaction of Cow's Milk.—From time immemorial it has been taught that cow's milk is acid in reaction and breast milk alkaline, and that it is advisable to add lime water to cow's milk in order to give it the proper alkalinity for infant feeding. But recent studies (*Pediatrics*, 1911, 127), have conclusively shown that:—

(1) Breast milk and cow's milk are both acid; (2) the litmus paper test for milk is unreliable because of the variation in the quality of litmus paper, and the litmus taking part in the reaction and not acting as an indicator; (3) the effect of adding lime water or bicarbonate of sodium to feedings is to retard or inhibit the formation of curds by rennet; (4) the teaching that lime water, bicarbonate of sodium, or carbonate of potassium should be added to fresh milk or feedings simply because they are anti-acids is erroneous; (5) the addition to milk or feedings of alkalies or salts that become alkaline in solution is an empirical method of aiding digestion by preventing the formation of dense curds that should slowly leave the stomach and be difficult of digestion in the intestine.

The opinion that breast milk is alkaline in reaction, and cow's milk is acid, and that alkalies should be given with cow's milk, in infant feeding, has been slowly changing, largely under the influence of the teachings of Dr. Henry Dwight Chapin who writes (Infant Feeding, Chapin, 1909, 70):—

"It is often stated that cow's milk has an acid reaction when it leaves the cow or in its fresh state. Acidity of milk is never estimated directly, but by the use of some color indicator. Milk that is neutral to litmus is usually quite acid to phenolphthalein; but it is thought that this is not true acidity, but the effect of the salts and casein found in the milk. The acidity of milk that aids the action of rennet is true acidity and is shown by litmus. An interesting proof that the acidity of phenolphthalein is not true acidity has been shown by Babcock, Russell, Vivian and Hastings. They found that pepsin, which digests proteid only in the presence of acid, would not attack the proteids of milk that was acid to phenolphthalein until 0.2 per cent. HCL was added, also that boiled milk would not coagulate with rennet; but it did so at once, as soon as acidified (82)."

Further, (p. 143), he adds:—

"Heating fresh milk, which drives off the gases it contains and possibly precipitates the acid salts of calcium, reduces the acidity greatly, as the following figures of Smethan and Ashworth quoted by Richmond show:—

Milk direct from the cow	26.7 degrees acidity
Milk direct from the cow, after boiling	12.2 degrees acidity"

It may be that fresh milk, like other body-fluids, contains carbonic acid gas, which in aqueous solution reacts with acid indicators, and is easily removed by boiling. It may be, also, that milk contains both alkaline and acid phosphates.

The important practical point in the use of alkalies—lime water, sodium bicarbonate, potassium bicarbonate, etc.—with cow's milk, is this; That the addition is not necessary for alkalinizing cow's milk to make it simulate breast milk, because the latter is not really alkaline, and the second point is the addition inhibits the action of the gastric ferments, keeps the food in a soft or fluid condition in the infant stomach, and enables it to leave the stomach quickly and pass into the intestines, where it is digested. In other words, the use of alkalies prevents gastric activity, and throws the entire wotk of digesting the proteids upon the intestinal ferments. The stomach has little or no work, and is not properly developed, while the intestines have too much work and are over-developed. You have atrophy in the first case, and hypertrophy in the second.

The addition of alkalies to milk is of value in the treatment of hyperacidity, because it corrects abnormal conditions, but its use as a routine measure is to be condemned as a most unwise procedure, physiologically.

The function of a food in infant feeding is nutritional and developmental. Not only should it furnish the right food elements, in the right proportions, to the tissues, but it should, also, by requiring work, promote the growth and development of all parts of the digestive tract.

In addition, it should furnish the food elements in the proper *physical* condition, so that while work is required of the digestive tract, the latter is not over-taxed. In other words, the cow's milk should be mechanically modified by a cereal decoction like Eskay's Food, so that sufficient work, and no more, is required for the normal growth and development of the digestive tract, and proper nutrition is ensured.

Infectious Diseases

Under the Charge of

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Bromoform and Pertussis.—Dr. W. F. Waugh, (*Monthly Cyclopedia and Medical Bulletin*, July, 1911), reports a case in which a child that was being treated for pertussis by bromoform, three drops in syrup of raspberries twice daily. The child gained access to the medicine and took the whole bottle containing fifteen grams of bromoform. Absolute anesthesia was the result. Constant flagellatian with a wet towel was kept up for ten or twelve hours. After the effect of the bromoform began to wear off the paroxysms returned. Dr. Waugh thinks the lesson taught is valuable and that bromoform is wholly a depressant, and has no specific action and does not shorten the course of the disease. Since bromoform is shown to be wholly a depressant the question is to be seriously considered whether the partial relief of a depressing drug like bromoform is worth the harm done in lowering the vitality. Bromoform does not appear to be a safe remedy as compared with other remedies which are equally effective, but not so depressing. Bromoform does not shorten the course of the disease, and Dr. Waugh naturally concludes that other remedies should be used. Calx sulphurata which has been used with much success in Europe is to be preferred to bromoform. Dr. Coleman of Texas found that patients were quickly cured by the sulphide even in the early stage and these patients were immune to subsequent infection.

Poliomyelitis Acuta.—A report of three cases in the same family at the same time. Dr. A. L. Skoog, (*The Medical Herald*, October, 1911), reports three cases of poliomyelitis, three children, in the same family at the same time. The father is a railroad brakeman living with his wife and children in a small town in extreme Western Kansas. The mother and her three children went to Topeka for a few days visit, returning home October 24th. Several cases of acute poliomyelitis had been present in and about Topeka, which was probably the source of infection of the children. The first case appeared in the infant, aged eight months, on November 8th. The second case appeared in a little girl aged four years on November 16th. The third to develop the disease was a boy aged two and a half years. The disease appeared November 17th. The blood picture was very significant, the mild leucocytosis was found in all three cases. The most significant diagnostic procedure in all early cases is an examination of the cerebro-spinal fluid. It offers the best single diagnostic finding for the pre-paralytic stage. The mild increase of lymphocytes in the cerebro-spinal fluid is probably dependent upon the inflammation and infiltration of the pia-archnoid and the ependyma. The elder two children were apparently infected from the baby. Wickham reports 1031 cases in Sweden, one case in 627 houses, two cases in 95 houses, three cases in 39 houses, four cases in 15 houses, five cases in seven houses, six cases in one house. In 19.7 per cent. there were multiple cases in the same house. It is therefore entirely reasonable to conclude that acute poliomyelitis is infectious. It is also urgent that all cases of poliomyelitis be isolated.

Diagnosis of Scarlet Fever.—Dr. A. K. Gordan, (*Practitioner*, 1911, 1 XXXXVI, 713), believes that scarlet fever is a mixed infection and that no one definite organism is the cause of the disease. The observation as given asserts that from a scarlet fever patient one of three conditions may be acquired. Scarlet fever, simple tonsillitis or severe ulceration of the fauces may be contracted. In either of these affections the origin is definitely streptococcal. The fallacy lies in the attention to lay stress on the eruption, according to the author. The discovery of bipord is not mentioned. As regards the throat symptoms, the point of most value is the co-existence of exudate on the fauces with a peeled and papillated tongue.

In a case where we are told that the patient has had scarlet fever; in the absence of desquamation or the throat signs mentioned there are two points of value. One of these is the presence of dark brown isolated follicular raised spots on the outer aspect of the legs or arms, not thighs or fore arms. These, when well marked are practically diagnostic of scarlet fever, but they are not present in more than 50 per cent. of the cases of that disease. Another sign is slight albuminuria combined with repeated negative cultures for diphtheria bacilli from the fauces. Indefinite or profuse branny desquamations are not characteristic of any disease, and they may be produced by various washes. The presence of acute nephritis with blood in the urine colon, combined with desquamation is practically pathognamonic of scarlet fever. Otorrhea is not conclusive.

Salvarsan Injected Into the Mother During Lactation for the Benefit of the Nursing Child.—E. Jeanselme (*Am. de gynetdobst*, July, 1911), after considerable study on the injection of salvarsan into the nursing mother for the benefit of the child comes to the conclusion that salvarsan is excreted in the mother's milk in sufficient quantity to cause a recession of the superficial syphilitic manifestations in the child, such as neaculo-squaneans syphilide, mucous patches, etc., but it is not rare to observe a return of the syphilitic manifestations. The maternal injections will not effect deep viceral lesions of the child. They may even be aggravated and cause the death of the infant. If the deep visceral organs are badly affected it is safer not to use salvarsan on the mother. Mercurial injections may cure lesions which salvarsan cannot reach.

Dr. C. F. Marshall, (*British Journal Children's Diseases*, 1911, v. 111 100), confirms the statement made by Jeanselme that salvarsan does not reach the visceral lesions of a child. It does not benefit the parasyphilitic. Dr. Marshall believes that salvarsan has a rapid healing effect on certain syphilitic lesions, chiefly of the ulcerative type, but the effect is not constant and is often temporary.

Dr. Marshall believes that mercury is more beneficial to the infant than any drug yet tried.

Epidemiology of Diphtheria, Scarlet Fever and Measles.—Dr. H. W. Hill, (*Journal of the American Public Health Association*, Vol. No. 3, March, 1911), discusses in a very practical manner the epidemiology of the infectious diseases of childhood. Dr. Hill points out that the primary vehicle of infection is the discharges from the naso-pharynx, the diseases being conveyed from the nose or mouth of one person to the nose or mouth of the other. It is certainly true of diphtheria, scarlet fever and measles that the orifices are the modes of receiving and spreading infection. The scales of scarlet fever, except when infected by the hands and mouth discharges are probably harmless.

The sputum carrying bacteria is in a mucoid state and when drying upon articles is difficult to remove smears on the patients or attendants hands give a wider radius of action for the disease.

The conveying of a disease by a third person is not common. Measles is not conveyed by a third person. The infectivity of the three diseases before and after the acute attack varies. Diphtheria is infectious as soon as the germs enter the throat and for a long time after the patient is apparently well. Scarlet fever is infectious for a similar period. Measles appears to be uninfective during the period of first incubation and its post-lesion persistance is unknown but probably short. Insusceptible throats seem incapable of carrying the infective agent. As soon as insusceptability is established it appears that a case of measles becomes non-infective. Recovered measles do not seem to remain a source of infection as do recovered cases of diphtheria and scarlet fever contact the nouth spray, the interchange of naso-pharyngeal discharges which goes on everywhere is the essential medium of infection in diphtheria, scarlet fever and measles. This is the same problem which spreads tuberculosis, pneumonia, whooping-cough, chicken-pox and small-pox. In other words, the problem of infectious diseases is the problem of the exchanges of human discharges of all kinds. To eradicate infection there must be a perfect isolation of the patient during the period of infection.

In the case of diphtheria it is important to discover the carriers who have infected throats and no lesion. In other diseases such as measles and scarlet fever the carriers of such exist, cannot as yet be discovered. The organisms are far more abundant in the patient than in any "carrier." "Carriers" of diphtheria are probably only "carriers" for a short time. The carrier is not fussed over like the patient, but not as much avoided.

The opening of schools being a medium of contact of children is usually a signal for outbreaks of diphtheria, scarlet fever and measles. This is a strong argument in favor of contact and tends to disprove the theory of carriers except in cases of diphtheria.

BOOK REVIEWS

Joint Tuberculosis, by Leonard W. Ely, M. D., Consulting Orthopaedist to the County Hospital, Attending Orthopaedist to the Children's Hospital, Denver, Colo., Member of the American Orthopaedic Association and the American Medical Association; Associate Fellow of the New York Academy of Medicine; Formerly Surgeon to the Sea Breeze Hospital, Consulting Orthopaedist to the Roosevelt Hospital; Orthopaedist Surgeon to the Metropolitan Hospital, N. Y., etc. Illustrated. Price, $2.50 net. New York. William Wood & Company, MDCCCCXI.

No disease or malady can be correctly understood without a thorough knowledge of its pathology. Therefore, the key to the phenomena of joint tuberculosis will be found only by a correct study of its pathology, backed up by clinical experience. Dr. Ely, in his admirable work, "Joint Tuberculosis" has endeavored to unravel the problem and to supply a satisfactory treatment. The reviewer can, in no better way show the advanced thought of the author than to call attention to his ideas with the relation of the tubercle bacillus to the lymphocyte. According to his deductions the problem of joint tuberculosis becomes indeed a simple one.

He suggests that the lymphocytes and certain other similar cells are not Nature's defensive organism, but the natural food of the tubercle bacillus. When the bacilli thrown out from the blood into the various tissues find cells suitable for their growth they live, when they do not find these cells they die. In other words, the relation of the tubercle bacillus to the lymphocyte is the same as that of the gonoccccus to the polomorpho-nuclear or of the malarial plasmodium to the red cells. It is extremely interesting and explains his earlier statement of the selection of the red marrow of bones as the selective site for tuberculosis as the bacilli can find no food in the yellow marrow.

The book is replete with apt paragraphs and trite sayings as, "The treatment of joint tuberculosis in children is almost invariably conservative, in adult it is almost invariably radical," again, "A skilled instrument maker is a convenience but not a necessity. If the surgeon knows exactly what he wants, a blacksmith and a harness maker can carry out his instructions."

We agree with the author that the final word has not been spoken in regard to the use of vaccines and tuberculin in tuberculous joints; in the hands of some it has certainly seemed to have been of value; many agree with this statement, some do not.

The author condemns the popular practice of injecting solutions of iodoform or other substances into the tubercular joints. He condemns Huntington's so-called "tunnelling operation" as absurd.

Section one of the work is devoted entirely to "Joint Tuberculosis" generally. Section two is devoted to a full consideration of tuberculosis of the spine, the hip, knee, ankle, tarsus, wrist, shoulder, elbow, sacro-iliac joint, and the fingers and toes. Each are fully considered in all respects. The author's description of the differential diagnosis in treatment of all these varied conditions is presented in a very satisfactory manner. The book closes with an appendix containing a number of very valuable case histories. The illustrations are sufficient, the press work is satisfactory, the binding is elegant and we take pleasure in reading and more pleasure in commending it to others.

"Diseases of Infancy and Childhood." Their Dietetic, Hygienic and Medical Treatment.—A text-book designed for practitioners and students in Medicine. By Louis Fischer, M. D. Visiting Physician to the Willard Parker and Riverside Hospitals of New York City; former Instructor in Diseases of Children at the New York Post-Graduate Medical School and Hospital, etc., etc., Fellow of the New York Academy of Medicine. Fourth

Edition. With 308 illustrations, many in colors, and 30 full-page half-tone and color plates, 979 royal octavo pages. Sold only by subscription. F. A. Davis Company, Publishers, 1914-16 Cherry Street Philadelphia, Pa. Price, Extra Cloth, $6.50; Half Morocco, $8.00, net.

That a fourth edition of this work has been demanded by the profession inside of four years bespeaks its popularity and reflects the esteem with which its author is held as a teacher of diseases of infancy and childhood. The present revision mirrors a thorough and complete resume of the whole subject of Pediatrics.

Many improvements over the recent editions are outlined. Infant feeding, the bugbear of the physician with family practice has been rewritten from a practical standpoint, and the teachings of Czerny, Langstein, Finklestein and Meyer are concentrated in a new article on fat, sugar and proteid. The plain language in dealing with home modifications rather than complex problems with percentages will be appreciated. The value of malt soup preparations, buttermilk feeding and casein milk are some of the forms of feeding for abnormal cases, described. Atrophic and marasmic infantile disorders receive special attention.

Faulty metabolism heads a new article which will be appreciated by the general practitioner, infantile stools are considered and their significance as a guide to the proper method of feeding is discussed. To differentiate pyloric spasm from true hypertrophic pyloric stenosis, the author has added an article illustrating a minature duodenal bucket for determining the patency of the pylorus. The article on tuberculosis with especial reference to modern methods of therapeutics offers up to date points. The article on syphilis with especial reference to the Wasserman reaction and the treatment by the injection of salvarsan ("606") has been elaborated. Blood serum injections in treatment of haemorrhagic diseases is described. New methods of treatment of poliomyelitis are described. A new treatment of erysipelas by the use of epsom salt is recommended, this treatment is in vogue at the Willard Parker Hospital.

Some of the more important therapeutic points emphasized in this revision include the rewriting of the chapter on cerebro-spinal meningitis and a new section giving the intra-spinal; also the intra-ventricular methods of treatment with Flexner's anti-meningitis serum has been added. This, perhaps is one of the strongest chapters in the work. In this article, the author dwells at length on the diagnostic value of lumbar puncture. He succinctly describes the various types of infectious meningitis due to the diplococcus, and also due to the influenza baccillus. The above are a few of the more important points which have been added for the teacher in college, for the student requiring up-to-date data and more especially for the general practitioner, who requires the latest ideas and details in therapeutics.

Among the beautiful illustrations we note an especially good anatomical plate in the article on suppurative meningitis. Excellent illustrations on sprue, scarlet fever and syphilis are added. The book is well adapted as a text-book in the medical colleges as well as for the student in medicine.

VOLUME XXIII, 1911

CONTRIBUTORS

Amesse, J. W., M. D., Denver, Colorado 741
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Anderson, W. H., M. D., Wilson, N. C. 609
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Baughman, Greer, M. D., Richmond, Va 98
Brewer, Isaac W., M. D., Manila, P. I. 161
Barrett, J. Boyd, M. B., B.Ch., Dublin, Ireland 212
Brown, Alan G., M. D., Toronto, Canada 229
Bliem, Milton J., M. D., San Antonio, Texas 586
Cautley, Edmund, M. D., Cantab, F. R. C. P., London, Eng. 264
Coit, Henry L., M. D., Newark, N. J 291
Coues, Wm. Pearce, M. D., Boston, Mass. 392
Coplan, M., M. D., Cleveland, Ohio 465
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Caille, Augustus, M. D., N. Y. City 545
Davis, Gwilym G., M. D., Philadelphia, Pa 753
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Elmer, Walter G., M. D., Philadelphia, Pa 235
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Fischer, Louis, M. D., N. Y. City 397
Gillette, Arthur J., M. D., St. Paul, Minn. 140
Gantt, L. Rosa H., M. D., Spartanburg, S. C. 337
Goddard, Henry H., Ph., D., Vineland, N. J. 350
Hollopeter, Wm. C., A. M., M. D., Philadelphia, Pa 277
Hazen, Chas. M., M. D., Richmond, Va 286
Hillkowitz, Philip, M. D., Denver, Colo 749
Hodgetts, C. A., M. D., Ottawa, Canada 521
Hunter, Q. W., M. D., Louisville, Ky 655
Knox, J. H. M., M. D., Baltimore, Md 10
Kiernan, James G., M. D., Chicago, Ill. 197
Kerr, Le Grand, M. D., Brooklyn, N. Y. 329
Lederle, Ernest J., M. D., N. Y. City 724
Little, Albion H., M. D., Portland, Maine 474
Luton, L. S., M. D., St. Louis, Mo. 480
Macy, Mary Sutton, M. D., N. Y. City 665
Markley, A. J., M. D., Denver, Colorado 677
Morse, John Lovett, A. M., M. D., Boston, Mass. 163
Newmayer, S. W., M. D., Philadelphia, Pa 80
Northridge, Wm. A., M. D., Brooklyn, N. Y. 104
Netter, Arnold, M. D., Paris, France 407
Newkirk, H. D., M.D., Minneapolis, Minn. 672
Pardoe, John, M. D 39
Patterson, A. M., M. D., Liverpool, Eng 642
Potter, Philip S., A. B., M. D., Syracuse, N. Y. 454
Pisek, Godfrey R., M. D., N. Y. City 552
Pease, Marshall C., Jr., M. D., N. Y. City 552
Pritchard, Eric, M. A., M. D., Oxon., M. R. C. P., London, England 708
Ramsey, Walter R., M.D.,Minneapolis, Minn. 15
Rolleston, J. D., M. D., London, England 94

Riviere, Clive, M. D., F. R. C. P., London, Eng. 129
Rich, Herbert M., M. D., Detroit Michigan. 148
Roberson, Chas., M. D., Greensboro, N. C. 532
Ruhrah, John, M. D., Baltimore, Md. 594
Radcliffe, Arthur A., M. D., Waukegon, Ill. 617
Sill, E. Mather, M. D., N. Y. City. 91
Smart, Isabelle Thompson, M. D., N. Y. City. 665
Starr, F. N. G., M. B., Toronto, Canada. 232
Smith, Eustace, M. D., London, England. 322
Scott, George Dow, M. D., N. Y. 334
Siegelstein, M. J., M. D., N. Y. City. 397
Steinhardt, Irving D., M. D. 484
Sanders, W. H., M. D., Montgomery, Ala. 525
Tucker, Beverly R., M. D., Richmond, Va. 270
Townsend, J. F., Jr., M. D., Charleston, S. C. 410
Upshur, John N., M. D., Richmond, Va. 6
Visanska, Samuel A., Ph. G., M. D., Atlanta, Ga. 482
Weston, William, Columbia, S. C. 418
Waugh, Wm. F., A. M., M. D., Chicago, Ill. 614
Zahorsky, John, M. D., St. Louis, Mo. 282

EDITORIALS

Appetites the Result of Imitation 635
Anti-Vivisectionists and Psychological Research 259
Anaphylaxis, Infection and Immunity 511
Bronchitis, Chronic 193
Castration and Masturbation 1
Clothes and Other Things 4
Children, Sleep for 76
Colic, Infantile 194
Crying for Infants, The Healthfulness of 320
Cholera Infantum and the Means of Prevention, Contaminated Artificial Food a Factor in the Causation of 386
Child Cries, Why the 581
Child, The Only 584
Colds, Coddling of Children and the Infectiousness of 702
Cardiac Diseases in Infancy and Childhood 638
Cardiac Diseases in Children, The Period of Greater Danger of 639
Dyspepsia of Infancy, The Acute 257
Education with the Young, the Evil Effects of Too Much 319
Feeble-Minded Child—A Menace to the State and Society, What Shall be Done With the 637
Gastro-Enteritis in Young Children 316
Hot Weather and Young Children 445
Harvard's Youngest Student 641
Illusion, Another Lost 127
Infantile Paralysis, The Contagiousness of 261
Infant Feeding 381
Infant Mortality 513
Infant Mortality, The Cause of, Poverty; Ignorance and Neglect 516
Lumbar Puncture in Children On the Safety of 701
Milk Preservation, The Problem of 2
Measles, Some Remarks on 78
Measles, A Few Thoughts on 262
Milk Preservation vs. Tuberculosis, The Problem of 447
Milk as a Food for Infants, Condensed 699
Pneumonia, The Contagiousness of 75
Pastuerization of Milk 584
Renal Colic in Infants 321
Roentgen Ray Diagnosis, Children and 383
Sajous as Editor of the N. Y. Medical Journal 704
Scarlet Fever, Bacteriology and Clinical Aspect of 125
Suckle Their Offspring, Why Women Should 191
Sexual Subjects, The Necessity for Instructing Children in 579
Tuberculosis in Childhood 124
Tuberculosis, Lime Salts in 127
Thyroid Insufficiency A Possible Factor in Retarded Juvenile Development 315
Typhoid Fever, Infancy and 449
Tetany and the Myotonia of Infancy 450

Tetanus, Independence Day.... 451
Toxemia in Infants, Acute Intestinal.................... 582
Volume, The Close of Another.. 703
Dr. Wyman's Successor........ 705
X-Ray in the Treatment of Fractures, Observation of the 77

ORIGINAL ARTICLES

Ailments in Infancy and Their Treatment, Common...... 708
Appendicitis in a Child, An Irregular Type of............ 235
Adenoids, The Cessation of Petit Mal Through the Removal of................ 334
Anti-Toxin, the Therapeutic Utility of Diphtheria, with Remarks on Anaphylaxis and on the Feasibility of a Scratch Test.................... 545
Anaphylaxis in Its Relation to Pediatric Practice.......... 552
Bronchitis in Children, Persistent.................... 218
Child, The Only............ 594
Cerebro-Spinal Meningitis..... 598
Carcinoma and Sarcoma in Early Childhood................ 733
Child as an Asset to the Nation, The.................. 642
Children, on the Medical Examination of, Reported as Mentally Defective in the Public Schools.................. 665
Care of Infants, Practical Points on the.................. 6
Cystitis and Pyelo-Cystitis in Infants and Young Children.. 15
Camphor Injections in Pneumonia in Children, with Report of Fourteen Cases............ 397
Diphtheria, Intubation in...... 538
Eczema, the Management of Infantile.................. 677
Enteritis in Infants and Its Dietetic Treatment.. 672
Feeble-Minded, the Menace of the.................... 350
Fractures in Children, the Importance of the X-Ray in the Diagnosis of Obscure........ 392
Fetus in Utero, the Physiologic and Legal Status of the...... 525
Hydrocephalus, a Case of Arrested.................... 158
Hay Fever in Children, the Diagnosis of................... 277
Hygiene in Childhood and Youth Mental.................. 343
Infantile Paralysis, the Statistics of..................... 521
Infant Mortality, The Reduction of.................... 532
Infantile Paralysis, Etiology and Pathology................ 749
Infant Mortality, Erroneous Ideas on and Methods of Reducing it................ 80
Infantile Paralysis, Prophylaxis and Treatment of.......... 741
Infant Feeding, Conversive and Adaptive................. 104
Infantile Paralysis, the Orthopedic Treatment of........ 140
Infantile Paralysis Simulating Cerebro-Spinal Meningitis... 407
Infantile Scorbutus.......... 418
Infections of the Urinary Tract, by Bacillus Coli in Infancy and Childhood............ 31
Intussusception, Recent Results at the Hospital for Sick Children..................... 232
Mother's Milk, the Modification of.................. 98
Measles, the Diagnosis of...... 264
Medical Milk Charities........ 291
Moral Training of Mentally Deficient Children, the........ 329
Medical Inspection of School Children................ 337
Medical Inspection of School Children................ 410
Medical Inspection of Our Public Schools................ 465
Milk Supply, the Sanitary Control of New York's.......... 724
Nocturnal Enuresis, Taka-Diastase in................... 617
Nurasthenia in Children....... 129
New England Pediatric Society, Address of the President of the.. 163
Ophthalmia Neonatorum...... 474
Poliomyelitis, the Surgical Treatment of................. 753
Prevention of Infant Mortality 10
Poliomyelitis, A Skin Eruption in Six Consecutive Cases of... 229
Poliomyelitis, the Prevention of with Especial Reference to the Prevention of Deformity.. 270
Poliomyelitis, Report of Cases, Electrical Treatment........ 286

Pediatrics, a Few Practical Applications of Radiography in . . 388
Purpura, a Case of Treated with Human Blood Serum 480
Rheumatism in Childhood and Adult Life, the Difference Between the Manifestations of . . 212
“Summer Complaint,” the Treatment of 484
Scarlet Fever, with Report of Case, Atypical 609
Sarcoma in Infancy and Early Childhood 655
School Children in New York City, Dietary Studies of Undernourished. 91
Scarlet Fever and Chicken-pox, Concurrent 94
“Summer Complaint,” Are We Satisfied with Our Present Knowledge as to the Cause and Treatment of. 482
Tonsillitis 614
Tuberculosis in Children. 148
Thumb-Sucking as an Auto-Erotic Phenomena 197
Thrush 322
Tuberculosis in Children, Portals of Entry of 454
Urinary Tract in Infancy and Childhood, the Treatment of Acute and Chronic Affections of the 39
Vital Statistics of Twelve Towns in the Island of Cebu, Philipine Islands 161
Whey and Condensed Milk in the Treatment of Infantile Atrophy 282
Welfare of the Child From the Eugenic Standpoint 586

SOCIETY TRANSACTIONS

Angina, Vincent’s 557
Anaphylaxis in Its Relation to Pediatric Practice 558
Baccilluria 48
Bacteriological Investigations, General 49
Cretinism, a Case of. 360
Diarrhea in Infants Associated with the Presence of the Gas Bacillus in the Stools. 240
Duodenal Catheter in Studying Duodenal Indigestion, the Value of 758
Diarrhea in Infants, Silver Nitrate Irrigations in the Treatment of Infectious. 169
Fractures in Children, the Importance of the X-Ray in the Diagnosis of Obscure 556
Intestinal Tract of a Child, Successful Passage of an Unusual Foreign Body Through the . . . 556
Indigestion in Children, Acute Duodenal 757
Infant Mortality vs. Unwholesome Milk 684
Inspection of the Larynx, Trachhea and Bronchi in Children, The Value of Direct 364
Milk Supply of New York City, The 111
Meningitis 298
Milk Bacteriology, of 423
Milk Chemistry and Food Value of 424
Milk Modification of. 425
Milk Problem the 491
Oxycephalus 361
Ptosis of the Abdominal Viscera, What is to be the Attitude of the Pediatrist and the Orthopedist in the Treatment of the Child with Congenital? 168
Public Health Laboratory 239
Poliomyelitis, Epidemic 428
Poliomyelitis, the Symposium on Acute 490
Public Health Exhibit of the Ontario Board of Health at the Annual Exhibition at Toronto, the 620
Pure Milk an Impossibility. 684
Poliomyelitis Said to be Caused by Infected Dust, Acute. 685
Stenosis, Congenital Hypertrophic Pyloric 298
Scurvy, Infantile 362
Scurvy in Infantile Paralysis. . . . 363
Stenosis, Congenital Pyloric 426
Streptococcus Antibodies in Scarlet Fever with Special Reference to Complement Fixation Reactions, A Study of 758
Stenosis of the Bile Ducts a Hindrance to the Digestion of Fats, Congenital 758
Streptococcus Vaccine in Scarlet Fever, the Value of 760
Tonsils, When Shall We Remove and What Type of Operation Shall We Do?. 166

Tuberculosis, Discussion on..... 171
Transfusion of Infants with Glass Tubes, the................ 238
Typhoid Fever, Symposium on.. 489
Typhoid Fever, the Therapeutic Use of Vaccines in........... 763
Typhoid Fever in Children, the Dietetic and General Management of 763
Unfit, the Problem of the, vs. Preventive Medicine, the Medicine of the Future........... 489
Vaccine Inoculation, Prophylactic and Curative, of Typhoid Fever 761
Wet Nurses' Directory: One Year's Experience........... 365

RETROSPECT OF CURRENT PEDIATRIC LITERATURE

Appendicitis in Children, Chronic 246
Appendicitis in Children, Chronic 183
Anaphylaxis for Cow's Milk in Nurslings 119
Acidosis in Children, Idiopathic 64
Anuria, Post-Scarlatinal, for five Days in a Boy of Three and a Half Years, Recovery 68
Adrenals, the Induction of Pancreatic Activity by the Removal of the................ 71
Acetonemia in a Young Child... 72
Amoebiasis, Ipecac in the Treatment of Intestinal........... 245
Arsenobenzol in Nerve Syphilis, the Action of............... 302
Arsenobenzol, Experience with.. 303
Auto-Intoxication From the Alimentary Canal 311
Asphyxia of the New Born Relieved by Placental Aeration.. 369
Angiomata of the Left Loin and Leg 377
Arteries in Children, Palpable... 377
Appendicitis in Children....... 378
Artificial Feeding, Recent Experiences in, of One Hundred Infants During the First Three Months of Life.............. 494
Albumen Content of Human Milk, Contribution on the Value of..................... 495
Amebic Dysentery Problem in North Carolina............. 497
Antisepsis, Skin.............. 626
Bromoderma Tuberosum Following the Use of Bromural, a Case of 63
Bile Ducts, Congenital Obliteration of the.................. 245
Bacillary Dysentery 431
Bacillary Dysentery, its Bacteriology, Biochemistry and Their Relative Treatment......... 500
Beri-Beri, the Cause of......... 766
Chorea Mollis................ 114
Congenital Syphilitics, the Future of ....
Cirrhosis of the Liver, A Case of 183
Constipation in Women and Children; the Prevention of.. 64
Constipation in Childhood..... 65
Constipation in Infants........ 66
Constipation, Agar-Agar Treatment of Chronic............ 67
Colic, A case of Biliary, Occuring in a Child, Followed by the Passage of a Gall Stone...... 246
Constipation of the Young, Training in the............. 247
Cow's Milk, the Modification of 307
Cirrhosis, Congenital Obliteration of the Bile Ducts with Hepatic 311
Constipation in Childhood, Agar Agar in the Treatment of..... 431
Colitis, the Surgical Treatment of Chronic 497
Catheters and Their Aseptic Conservation, the Sterilization of Rubber 504
Cystoscope, A Catheterizing and Operating 572
Constipation, Some Observations on the Treatment of Chronic. 627
Diphtheria of External Urinary Meatus, Primary 175
Danger Signals in Young Children 180
Diarrhea Caused by GasBacillus, A Rapid Presumptive Test for 64
Diphtheria in Children......... 67
Dermatitis Fibrinosa Faciei.... 247
Diphtheria in the New Born and in Infants, the Diagnosis of Nasal 305
Diphtheria of the Vulva in a Child 306
Diphtheria in the United States, the High Death Rate From.. 372

Duodenum, Case of Congenital Occlusion of the, (Accompanying a Deficiency of the Hind Gut) 312
Dyspnea in Children, Acute Laryngeal 370
Dysentery, the Treatment of Infantile, by Calomel and Injections of Silver Nitrate 430
Digestion in Infants, Relation of Gastric to Pancreatic Fat 495
Diarrhea Caused by the Gas Bacillus, A Rapid Presumptive Test for 432
Diphtheria Anti-Toxin: Action Dosage 624
Diphtheria, Epidemology of 501
Diphtheria, Carriers in Relation to the Spread of 502
Diarrhea Infectious. Its Treatment, with Especial Reference to the Biochemical and Bacteriological Standpoint 562
Diarrhea in Infants, Silver Nitrate Irrigations in the Treatment of Infectious 562
Diarrhea in Infants Associated with the Gas Bacillus in the Stools 563
Diarrhea in Infants Under Two Years, Summer 563
Diarrhea in Children, Principles of Treatment of Summer 566
Dysentery, the Treatment of Bacillary 628
Dermatomyositis, A Case of 766
Diphtheria Epidemiology of, Scarlet Fever and Measles 774
Diphtheria, Unusual Localization of 686
Erythema Muliforme with Lung and Heart Complications, Bullous Form of an 63
Ecclamptic Mothers Nurse the New Born, Should ? 70
Eczema, Acute Infantile 304
Enteritis Trichocephalus 499
Erysipelas in Infants, Exceptional Forms of 501
Ear Involvement in Acute Infectious Diseases, Importance of Early Recognition of Internal 622
Epicondyloid Glands in Children, the Diagnostic Value of Palpable 767
Feeble-Mindedness, Prevention of 183
Food, On the Influence and Variety of the, on the Growth and Development of the Suckling 187
Finklestein-Meyer Method of Infant Feeding by "Casein Milk," the 249
Feeding Formulae—Home Modification of Cow's Milk 438
Formulas for Home Modification of Bottled Milk for Feeding During Summer Months 439
Feeding of Sick Infants, the 493
Feeding During Infancy, the Late Effects of the Mode of 495
Feeding, Breast 495
Foods, Approximate Composition and Caloric Value of 568
Feeding in Infants, Artificial 689
Feeding of Fats to Infants and the Difficulties Encountered 692
Gonorrheal Vulvo-Vaginitis 374
Gastro-Enteritis in Infants, A Neglected Phase of the Prevention of Summer 431
Gastro-Intestinal Tract, Classification of Diseases of the 496
Gastric Ulcer in Children 497
Gastric Ulcer, Diagnosis of 564
Gastro-Intestinal Tract in Infants, Edema Occurring in the Courses of Diseases of the 629
Gastro-Enteric Disease in Infants, A Neglected Phase of the Prevention of 769
Gastro-Enteritis in Children, General Oedema Following 770
Human Milk 182
Hypogastrodidymy, A Case of 184
Hip, the Treatment of Congenital Dislocation of the 188
Hemorrhages Caused by Artificial Hyperemia, Cutaneous 247
Herpes Phenol in (Zoster) 303
Hook Worm in Kentucky People the Presence of 305
Hernia in an Infant Eight Weeks of Age, Strangulated Inguinal 312
Hemophilia Treated by Transfusion 371
Hypopituitarism 375
Ichthyosis Congenita a Contribution to 62
Intestinal Irritation in Infants and Children, Remote Symptoms From 246
Intestinal Infections in Children 246
Infantile Atrophy, the Treatment of Severe Forms of 247
Influenza in Infants 252
Intussusception, Clinical Aspect of 312
Intestinal Indigestion in Children 366

Intestinal Crises in Infants Eosinophile 367
Idiots, Examination of Blood Serum of, by Wasserman Reaction 371
Infectious Diseases, Suggestions in Connection with Municipal Measures of Prevention of Invasion of 433
Infectious Diseases, A Frequent Cause of 434
Infant Feeding on the Morbidity and Mortality of Infants, A Statistical Investigation Relative to the Influence of Various Methods of. 494
Infant Feeding, the Limitations of the Caloric Method of. 567
Infections, Transmission of. 622
Icterus Neonatorum, Death of Five Children, Born Successively to one Mother 771
Infant Feeding, Cow's Milk in . . 690
Infant Feeding, Caloric Method of 691
Infant Feeding, Top Milk and Whey for 692
Jaundice, Epidemic of 623
Kidney, Report of a Case of Congenital Cystic Degeneration of the 436
Larva Migrans, a Case of. 63
Lactose and Lactic Acid in the Stools of Children Suffering From Green Diarrhea. 184
Lactation, the Influence of Nourishment of the Mother on 187
Lumbar Puncture in the Diagnosis of Poliomyelitis. 373
Lactalbumin Mixtures 690
Leprosy, An Experienced Man's Views 693
Myatonia Congenital of Oppenheim 119
Meningococcus Meningitis Hexamethylenamine in 185
Method of Sterilizing Milk Without Altering Its Ferments, New 186
Milk and Breast Feeding, Human 71
Magnesium Poisoning, Study of Ten Cases 72
Mega Colon, a Case of. 246
Measles, the Incubation Period of 248
Milk, Human 250
Milk in Pediatric Practice, Acidified 250
Milk for Malnutrition, Undiluted Citrated 251
Meninges, a New Sign of, Inflammation of the 373
Meningitis in Children, Epidemic Cerebro-Spinal 429
Milk and Milk Serums Raw and Pasteurized 439
Meningitis in Newly Born Infants, Tuberculous 503
Masturbation 507
Measles, Treatment of. 687
Measles, the Nature of Virus of 687
Measles, Urobilinuria in. 688
Measles, Relapse of Diphtheria After 688
Mumps and the Ear 688
Masturbation, Some Features of 694
Neurodermitis with Psoriasis . . . 62
Oblique Osteotomy of the First Metatarsal and Phalanx for Hallus Valgus. 178
Ovarian Dermoid in a Child Aged Eight Years. 184
Orthopedic Operations, Convulsions After 379
Oesophagus, Treatment of Stricture of 499
Ophthalmia Neonatorum 688
Paget's Disease of the Nipple . . 117
Poliomyelitis, Skin Eruption Complicating a Case of Anterior Poliomyelitis 117
Poisoning, A Case of Fatal Iodine Chloride 71
Pyloric Stenosis, Congenital 245
Pellagra, Personal Experience with a Few Cases of 253
Paralysis, Epidemic Infantile . . . 302
Poliomyelitis and Its Sequelae Practical Points in the Management of 305
Protein Feeding, Split 309
Perforation of the Esophagus in a Girl Ten Years of Age Unexplained 313
Pneumonia in Children, Topography in Pulmonary Localization in 367
Poliomyelitis Micro-Organism Found in the Blood of Acute Cases 179
Phthisis Pulmonalis in Children, Conditions which Simulate 368
Pyloric Stenosis in Infancy 564
Poliomyelitis in Children, The Manifestation of the Acute Stage of 569
Paralysis, Treatment of Infantile by Massage and Electricity 570
Paralysis, Epidemic Infantile . . . 571

Poliomyelitis, Skin Eruption in Acute Anterior 571
Prostate Enlarged, Associated with Vesical Tumor, Note of Six Cases 626
Pyloric Stenosis, Infantile and Infantile Spasmodic Pyloric Stenosis with Report of Three Cases 630
Pellagra, Some Suggestions as to the Etiology of 765
Pertussis, Bromoform and...... 776
Pneumonia in Infants and Young Children, the Serum Treatment of 434
Poliomyelitis, Pathology and Bacteriology, Etc 435
Purpura 435
Poliomyelitis, the Etiology of Epidemic and Its Possible Relation to Beri-Beri........ 503
Poliomyelitis, the Static Wave Current in Anterior.......... 503
Paresis, Use of Salvarsan in Juvenile General 561
Prostate Diagnosis of Enlargement of the................ 694
Rickets, the Pathogenesis of.... 371
Rice in Acute Inflammatory Diseases of the Skin............ 374
Ringworm and Acne........... 376
Ringworm of the Scalp, The X-Ray Treatment of........... 572
Syphilis Serum Diagnosis of.... 116
Syphilis, the Increasing Frequency of Inherited......... 116
Syphilis, the Prognosis of Congenital 176
Summer Diarrhea, Recent Reactionary Teachings Concerning 63
Scarlet Fever, the Mode and Cause of Its Transmission and Spreading 248
Scarlatina 252
Schools, Ventilation of......... 252
Spasmodic Disorders, the Role of Lime in 300
Streptococcic Eruptions, Some .. 304
Scarlet Fever, A Diagnostic Sign of 306
Stenosis of the Pylorus, Congenital Hypertrophic, with Special Reference to its Treatment 312
Salvarsan From Syphilitic Infants, Dangers of 372
Sign in Diphtheria Babinski's .. 374
Syphilitic Infant, Treatment of a, by Administering "6 6" to the Nursing Mother......... 375
Spina Bifida 378
Sarcoma of the Kidney in an Infant, Cystic................ 379
Stenosis of the Pylorus, Congenital Hypertrophic, with Special Reference to Its Treatment 565
Salvarsan, Dangers and Contraindications of............ 572
Spirochetae Pallidae, On the Means of Finding the, with Special Reference to the India Ink Method........... 573
Salvarsan in Juvenile General Paralysis 303
Santonin, Dangers of.......... 185
Scabies Contracted From a Cat, A Case of................ 625
Stenosis Combined Cardiac and Pyloric 768
Scarlet Fever, Diagnosis of..... 774
Salvarsan Injected Into the Mother During Lactation for the Benefit of the Nursing Child 774
Syphilis, Fundus Findings in Hereditary................ 437
Syphilis Acquired During Parturition, A Case of.......... 437
Syphilis, the Role of in the Etiology of the Spastic Palsies of Infancy and Childhood.... 492
Syphilis, the Pathology and Pathogenesis of............. 504
Skin Diseases and Their Differential Diagnosis, Ringed Eruptions in 506
Salvarsan for Infants and Young Children 695
Tuberculosis of the Bronchial Glands, Diagnosis of......... 118
Tuberculosis in the Infant, the Route of Infection of........ 178
Tuberculosis Hygiene of the Mouth and Pulmonary...... 179
Tuberculosis in Children, Guaiacose in.................... 186
Typhoid Fever in Young Children, Diagnosis of............ 68
Typhoid Meningitis, A Case of 69
Trichocephaliasis in a Child, Case of Fatal............... 245
Tape Worm in American Children, the Dwarf 245
Tuberculosis in Infants, the Doors of Entry of........... 251
Tuberculosis with Cavities in Children, Pulmonary........ 252
Tuberculosis, Anti Crusades, the Local Hospital Sanitarium as One of the Most Important Phases in the............... 253

Tetanus 300
Typhoid in Infancy............ 305
Typhoid Fever in Infants 311
Tonsilitis and Its Treatment, Acute 368
Tuberculosis in Children 368
Tuberculin Reaction, the Diagnostic Value of Von Pirquet's 369
Transplantation, Tendon....... 377
Typhoid and Para-Typhoid Fevers, the Leucocytes in the Early or Pre-Aglutination of 623
Typhoid Fever, the Vaccine Treatment of............... 686
Urethitis in Male Children, Gonococcus 61
Ulcers, Diagnosis and Treatment of Gastric and Duodenal 768
Ulcers, A clinical Study of Gastric and Conditions Possible to Mistake for it 768
Uric Acid, Oxypathy and 771
Ulcer, Feeding in Gastric 498
Ulcers, Gastric and Duodenal .. 563
Urinary Meatus, Primary Diphtheria of the External 688
Vulvitis, Vaginitis and Vulvo-Vaginitis of Children 62
Vaccine, Treatment of Diphtheria 185
Vulvas During Pregnancy, Pruritis 303
Vaccine Therapy in Diseases of Children 625
Vincent's Angina 693
Worms Passed From a Fecal Fistula, Round 185
Wasserman Test in the Study of Etiology of Mental Deficiency, the 69
Wanderlust in Childhood, the .. 243
Whooping Cough, Combined Quinine and Hydropathic Treatment of.............. 373
Whooping Cough, the Contagiousness of 687
Yeast for Pruritis Vulvae in Diabetes 625

BOOK REVIEWS

The Diagnosis of Children, by Henry Enos Tuley, M. D 73
Dawn of the Fourth Era in Surgery, by Robert T. Morris, M. D.................. 73
Food and Feeding in Health and Disease, by Chalmers Watson, M. D., F. R. C. P. E 73
A Practical Treatise on Diseases of Children by Eustace Smith, M. D............... 121
The Care and Training of Children, by Le Grand Kerr, M. D. 121
Principles of Public Health, by Thos. D. Tuttle, B. S., M. D. 122
Primer of Hygiene, by John W. Ritchie 122
Modern Diagnosis and Treatment of Diseases of Children, by Herman B. Sheffield M. D. 189
Case Histories in Pediatrics, by John Lovett Morse,A.M.,M.D. 189
Hand Book of Treatment for Diseases of the Eye, by Wm. George Eym, M. D., F. R. C. S., and E. M. Lithgow, M. B., F. R. C. S................. 190
The Prevention of Sexual Diseases, by Victor G. Vecki. M. D...................... 190
Studies in the Psychology of Sex, by Haverlock Ellis, L. S. A., England 254
A Text Book of Chemistry, by Edward Curtis Hill, M. D., 254
Hand Book of Diseases of the Eye, by Harry Caldwell Parker, M. D................. 255
Refraction and Motility of the Eye, by Ellice M. Alger, M. D. 255
Makers of Man, by Charles J. Whitby, M. D., (Cantab.) 256
On Acute Intestinal Toxemia in Infants, by Ralph Vincent, M. D...................... 256
Webster's International Dictionary of the English Language, Under the Supervision of Noah Porter, D.D., LL.D.......... 314
What Shall I Eat? By Dr. F. X. Gouraud 314
Gonorrhea in the Male, by Abr. L. Wolbarst, M. D 380
Edward P. Remingtons' Newspaper Dictionary for 1911 380
Education How Old the New, by James J. Walsh, M. D., Ph.D. Litt. D 443
American Association for the Study and Prevention of Infant Mortality 443
Merck's Manuel of the Materia Medica, (Fourth Edition) 444
A Text Book on Medicine for Students and Practitioners, by Adolf V. Strumpell, M. D 508

The Care of the Baby, by J. P. Crozer Griffith, M. D. 509
The Law of Sex Determination and Its Practical Application, by Laura A. Calhoun 509
Golden Rules of Pediatrics, by John Zahorsky, A. B., M. D. ... 510
The Medical Diseases of Children, by Reginald Miller, M. D. 575
A Manuel of Diseases of Infants and Children, by John Ruhrah, M. D. 575
A Practical Medical Dictionary, by Thomas Lathrop Stedman, A. M., M. D. 576
The Mysteries of Life, by Isabelle Thompson Smart, M. D. 577
Tuberculosis as a Disease of the Masses, by Adolphus Knopf, M. D. 577
Cholera and Its Treatment, by Leonard Rogers, M. D., F. R. C. P., F. R. C. S., B. S 632
Hand Book of Suggestive Therapeutics Applied Hypnotism Phychic Science, by Henry S. Munro, M. D. 633
Hughes' Practice of Medicine, Including a Section on Mental Diseases, by R. J. E. Scott, M. A., B. C. L., M. D. 633
Joint Tuberculosis, by Leonard W. Ely, M. D. 776
Diseases of Infancy and Childhood, by Louis Fischer, M. D. 776
A System of Diet and Dietetics, by G. A. Southerland, M. D., F. R. C. P. 697
A Text Book of Alkaloidal Therapeutics, by W. T. Waugh, M. D. and W. C. Abbott, M. D 697
A Pocket Medical Dictionary, by Geo. M. Gould, A. M., M. D. 698
Hieronymus Fracastor's Syphilis from the Original Latin 698

ILLUSTRATIONS

Concurrent Scarlet Fever and Chicken-pox 95–96
Jacket for Infantile Paralysis .. 147
Leather Foot Support to Prevent Deformity in Paralysis 147
Wrist Support used in Wrist-Drop Poliomyelitis 148
Four Illustrations Showing Curvature of the Spine in Infantile Paralysis 148
Two Illustrations Showing Loss of Muscular Support in the Legs in Infantile Paralysis .. 148
Four Illustrations Showing Paralysis of Leg Muscles, Infantile Paralysis 150–151
Two Illustrations Showing Paralysis of the Quadriceps Extensor Muscles 152
Two Illustrations Showing Lateral Curvature of the Spine Due to Infantile Paralysis 153
Case of Paralytic Club-Foot 155
Hydrocephalus, Four Illustrations 161
Unsupported Legs of a Case with Knee Abduction and Double Foot-Drop 271
Prevention of Foot-Drop of the Left Foot by use of an Adhesive Strap 273
Prevention of Foot-Drop by Allowing Feet to Rest Upon a Stool and Preventing Abduction by a Towel Around the Knees 275
Lacing Canvas up the Leg and Another Piece Laced Down the Foot and the Two Ends of the lacing Tied Together 276
Sub-Periostal Fracture of the Lower End of Radius 392
Sub-Periostal Fracture of Lower End of Radius 393
Transverse Linear Fracture of Tibia 394
Spinal Fracture of Tibia with Linear Fracture Above....... 395
Transverse Linear Fracture of Tibia 396